

BE DIRECT
DELL HOME



PRODUCTS



STORE



SUPPORT



SITE MAP



SEARCH



CONTACT

Buy Online
1-800-WWW

OptiPlex Desktops

Choosing the Right OptiPlex

- ▶ OptiPlex GX1p
- ▶ OptiPlex GX110
- ▶ OptiPlex GX100
- ▶ OptiPlex GX1
- ▶ OptiPlex G1
- ▶ OptiPlex Model Comparison
- ▶ OptiPlex Buyers Guide

About OptiPlex

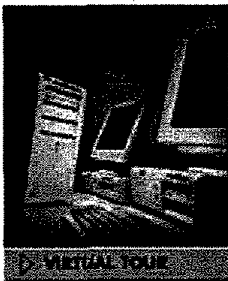
- ▶ What Is Managed PC?
- ▶ Managed PC Features
- ▶ Service Plans
- ▶ Awards & Reviews
- ▶ Obtaining Documentation
- ▶ Limited Warranties

System Components

- ▶ Processor
- ▶ Chassis & Expansion
- ▶ Memory
- ▶ Hard Drive
- ▶ Monitors
- ▶ Video/Graphics
- ▶ Audio
- ▶ Speakers
- ▶ CD-ROM
- ▶ Tape Backup
- ▶ Zip
- ▶ Networking
- ▶ I/O Connections
- ▶ Keyboards & Mice
- ▶ Operating System

Buy Online or Call:
1-800-WWW-DELL

DELL OPTIPLEX GX1



Specifications Manageability Features

Superior System Performance Today. Headroom for the Future

- Superior system performance and network manageability today, while helping to protect your technology investment tomorrow.
- Built with state-of-the-art and proven technology
- Delivers the industry-standard **Systems Management** for complex network needs



400MHz Pentium II Systems with monitor and 3 yr onsite service.
Starting from \$1,103

SELECT & PRICE

OptiPlex News

- ▶ Dell receives an "A" customer satisfaction Reliability and Service from PC Magazine
- ▶ Pentium III
- ▶ Windows 2000
- ▶ Dell Year 2000
- ▶ Total Cost of Ownership
- ▶ Vectors White Paper
- ▶ Direct Effect Program
- ▶ Dell Guard

Features

- New-generation Intel® processor technology: Pentium® III -600MHz -550MHz -500MHz -450MHz Pentium® II -400MHz
- 440BX chipset with 100MHz Front Side Bus Pentium processor and 100MHz SDRAM memory support
- Integrated 2X AGP graphics controller with 4/8MB SGRAM and integrated audio
- S.M.A.R.T. II Ultra ATA/33 7200 RPM 10, 13.6, and 20GB¹ drives and 5400 RPM 3.6 and 13.6 drives
- SCSI-S.M.A.R.T. II, UltraWide SCSI 7200RPM 4.5 or 9.1GB¹ drives and Ultra II SCSI 10,000 RPM 9.1GB or 18.2GB¹ drives
- Integrated audio for today's (and tomorrow's) media-rich environments
- Integrated security, fault management, data integrity, and configuration monitoring manageability features

Functions

- The GX1 is optimized for maximum life-cycles: 2X AGP provides full support for future applications and operating systems
- 440BX AGP chipset and 100MHz SDRAM to help ensure optimum performance for future applications
- Hard-disk drive with S.M.A.R.T. II predictive failure alert maximizes high-speed responsiveness to applications while reducing unplanned downtime

Benefits

- By combining the state-of-the-art performance of the latest Intel chipset and manageability features with industry-standard technology, the GX1 can give you the investment protection and flexibility designed to help lower your company's total cost of ownership
- GX1's maximized manageability features allow for software and firmware updates at any time, hardware maximization and software configuration control--all while helping to minimize unplanned downtime

300688

Programs and Deals

- ▶ Federal Government
- ▶ Small Business (up to 400 people)



OptiPlex Desktops

OptiPlex GX1 Virtual Tour

- ▶ Overview
- ▶ Processor
- ▶ Chassis & Expansion
- ▶ Memory
- ▶ Hard Drive
- ▶ Monitors
- ▶ Video/Graphics
- ▶ Audio
- ▶ Speakers
- ▶ CD-ROM
- ▶ Tape Backup
- ▶ Zip
- ▶ Networking
- ▶ I/O Connections
- ▶ Keyboards & Mice
- ▶ Operating System

OptiPlex GX1

- ▶ OptiPlex GX1
- ▶ Configure, Price, & Buy

Buy Online or Call:
1-800-WWW-DELL

OPTIPLEX GX1 VIRTUAL TOUR

Monitors

Dell is the #1 US color desktop PC monitor supplier! *

Dell monitors offer excellent image quality for all uses at great prices. They offer enhanced viewing with high resolution and refresh rates, sharp images and bright, vibrant colors. Check out all the reasons for purchasing a Dell branded monitor:

- **Exceptional reliability** - Dell works extensively with top tier monitor suppliers during all phases of Dell monitor development to help ensure reliability.
- **Exceptional compatibility** - Dell monitors undergo exhaustive testing on Dell systems and peripherals to help ensure compatibility
- **Single point of contact for support** - purchasing a Dell branded monitor means that you only have one company to contact if you need assistance
- **Monitors arrive with the systems**, potentially eliminating the costs associated with waiting for all components to arrive before beginning system installation
- **Single invoice** for monitor and system can reduce complexity
- **Includes a 3 year limited warranty¹**
- **Monitor and system have matching plastic color** for professional appearance

OptiPlex Buyer

- ▶ Reference
- ▶ Recommendation

SELECT & BUY

* Source: Stanford
Monitrak Q2 1998,
shipments to U.S.
(www.stanfordreso)

- ▶ Performance Series Dell Branded Monitors
- ▶ Mainstream Series Dell Branded Monitors
- ▶ Speciality Monitors

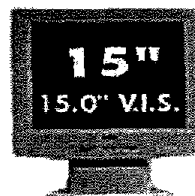
Performance Series:

Dell branded Trinitron® and flat panel displays for high quality graphics; excellent for multi-tasking, large data set analysis, and advanced graphics applications



UltraScan P1110

- 21" FD Trinitron®
- 19.8" Viewable Image Size
- .25mm-.27mm aperture grille pitch
- Displays over 65% more information than our 17" (16.0" V.I.S.) display when using optimal resolution



Dell 1500FP

- 15.0" Active matrix (TFT)
- 15.0" Viewable Image Size
- .297mm pixel pitch
- Require 60% less space than comparable CRT; consume less power

SPECS



SPECS



300689

UltraScan P780

- 17" FD Trinitron®
- 16.0" Viewable Image Size
- .24 - .25 mm
- New flat CRT technology reduces glare, making viewing more comfortable
- Displays over 60% more information than our 15" (13.7" VIS) display when using optimal resolution
- Shorter depth 17"- Only 1" deeper than 15" (13.7" VIS) 800F model
- TCO 99 Compliant

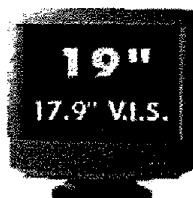
UltraScan FD Trinitron P991

- 19" Trinitron™
- 17.9" Viewable Image Size
- .24mm - .25mm aperture grille pitch
- Displays over 65% more information than our 17" (16.0" VIS) display when using optimal resolution

SPECS

Mainstream Series:

Dell branded monitors for general business applications and multi tasking, for users with lower graphics requirements.

**Dell M990**

- 19" High Contrast Flat Square Tube
- 17.9" Viewable Image Size
- .26mm dot pitch
- Supports up to 1600x1200 for ultra-high resolution operation
- Displays over 65% more information than our 17" (16.0" VIS) display when using optimal resolution

SPECS

**Dell E550**

- 15" Flat Square Tube
- 13.8" Viewable Image Size
- .28mm dot pitch
- Cost effective solution for entry level system requirements

SPECS

**Dell M570**

- 15" Flat Square Tube
- 13.8" Viewable Image Size
- .28mm dot pitch

SPECS

Speciality Monitors

300690

M770mm Multimedia

- 17" Flat Square Tube
- 16.0" Viewable Image Size
- .27mm dot pitch
- Integrated Stereo Speakers & microphone, volume control & headphone jack

SPECS

Display size recommendations

Because a display can impact the system's overall usability and a user's productivity, Dell recommends purchasing the largest display a buyer can afford.

Uses	Monitor Size	Benefits
<ul style="list-style-type: none"> • Single application tasks 	<div>15" 13.7" VIS</div>	
<ul style="list-style-type: none"> • Multiple windows/applications at once • Minimal graphics and desktop publishing 	<div>17" 16.0" VIS</div>	<ul style="list-style-type: none"> • 60% more information displayed than with our 15"(13.8"VIS), which can help increase productivity by 156 hours per year* • Short payback period
<ul style="list-style-type: none"> • Multimedia, CAD, extensive graphics and publishing • Financial applications and processing of large data sets • Frequent moves between applications 	<div>19" 17.9"-18.0" VIS</div>	<ul style="list-style-type: none"> • 65% more information displayed than with our 17"(15.9"-16.0"VIS), which can increase productivity by 204 hours per year when compared to a 15"(13.8"VIS) monitor* • More applications open
	<div>21" 19.8"-20.0" VIS</div>	<ul style="list-style-type: none"> • 65% more information displayed than with our 17"(15.9"-16.0"VIS), which can help increase productivity by 204 hours per year when compared to a 15"(13.8"VIS) monitor* • Supports 1600x1200 for ultra high resolution operation • More applications open

² Source: PC Computing, May 1998

Why buy Dell Trinitron® displays?

- Increased contrast due to darker glass
- High-phosphor surface for brighter images
- Aperture grill less heat sensitive for greater color purity
- Cylindrical shape versus spherical shape lessens reflections

Why buy flat panel displays?

- Less bulk, depth, and weight; require up to 60% less space than comparable CRT

300691

- Clear, sharp image even at maximum brightness; no flicker
- Lower power consumption; very little heat generation
- Image distortion is eliminated; reduced glare and reflection = reduced eye strain
- Not subject to distortion in areas of high electromagnetic interference; no emissions

HOMEPAGE	WORLDWIDE SITES	PRODUCTS	STORE	SUPPORT	SITE MAP	SEARCH	CONTACT
--------------------------	---------------------------------	--------------------------	-----------------------	-------------------------	--------------------------	------------------------	-------------------------

For US customers only.

Copyright 1999 Dell Computer Corporation. All rights reserved. ([Terms of Use](#))

[Online Privacy Practices](#)

Source: Stanford Resources: Monitrak Q2 1998, based on Q2 shipments to U.S. market(www.stanford.resources.com)

¹For a copy of Dell's Limited Warranties and Guarantees, write to Dell USA L.P. One Dell Way, RR1, Box 12, Round Rock, TX. 78628. Specifications only and subject to change without notice.

²Prices are subject to change without notice. Visit the [Dell online store](#) or call 1-800-WWW-Dell for the latest pricing
Dell, UltraScan and OptiPlex are registered trademarks of Dell Computer Corporation.

TRINITRON is a registered trademark of Sony Corporation.

Dell disclaims any proprietary interest in the marks and names of others.

300692

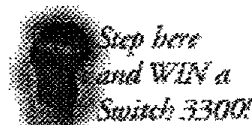


Products

[News/Events](#)
[Partners](#)
[Technology](#)
[Markets](#)
[Products](#)
[Support](#)
[Inside 3Com](#)
[3Com home](#)
[Log in](#)
[Site Search](#)
[Contact us](#)
[Site map](#)
[Site features](#)
[Document Center](#)
[Shopping list](#)
[Legal](#)

SuperStack II Switches for All Your Technology Needs

Today, your desktop population probably requires a mix of 10 Mbps and 100 Mbps service to meet the individual demands of your users. As you deliver higher speeds to the desktop, server connections may become strained, so you need options to scale to Fast Ethernet, Gigabit Ethernet, or ATM for high-speed desktop and server connections as well as in the backbone. With the SuperStack II family of switches, you can support all of your bandwidth requirements with the appropriate technology and the appropriate level of control.



Ethernet

Today, Ethernet is the most popular topology for implementing local area networks. Ethernet provides bandwidth that can be either shared across a number of users using hubs, or dedicated to workstations using switched technology. The availability of low-cost Ethernet switches has also made it possible to deliver dedicated 10 Mbps full-duplex links to the desktop, for affordable high-performance, high functionality, and highly manageable networks.

Fast Ethernet

Fast Ethernet, based on the Ethernet standard, is a high-speed technology that runs over your existing infrastructure, works with your existing management systems, and requires no retraining by your IT staff. Fast Ethernet is one of the most popular high-speed technologies because it's cost effective, stable, and compatible with existing Ethernet LAN environments. Fast Ethernet runs over 100BASE-FX fiber and 100BASE-TX copper. For greater performance, full-duplex is also supported.

10/100 Mbps Ethernet/Fast Ethernet

10/100 Ethernet/Fast Ethernet with auto-sensing capability is one of the most economical and flexible ways to add bandwidth immediately—while maintaining migration options to higher bandwidth in the future. 10/100 technology combines conventional 10BASE-T and high-speed 100BASE-TX support in one device, delivering higher bandwidth to the desktop, aggregating 10/100 hubs, and maintaining the status quo for those who are efficiently served by 10 Mbps Ethernet. With 10/100 auto-sensing functionality, there is no need to configure individual switched ports. The switch automatically senses the speed of the connected end device (either 10 Mbps or 100 Mbps) and channels the data through at the appropriate speed.

Gigabit Ethernet

Gigabit Ethernet retains the traditional simplicity and manageability of Ethernet and Fast Ethernet making it easy to integrate with existing LAN equipment. It allows a tenfold increase in backbone bandwidth over Fast Ethernet with minimal impact on support staff. The extra bandwidth helps you deal with unplanned changes and additions to the network, and frees you from constantly tuning the network. Gigabit Ethernet is a powerful backbone/server solution because it delivers phenomenal bandwidth cost effectively, preserves the Ethernet frame format, and works with your existing traffic management systems.

ATM

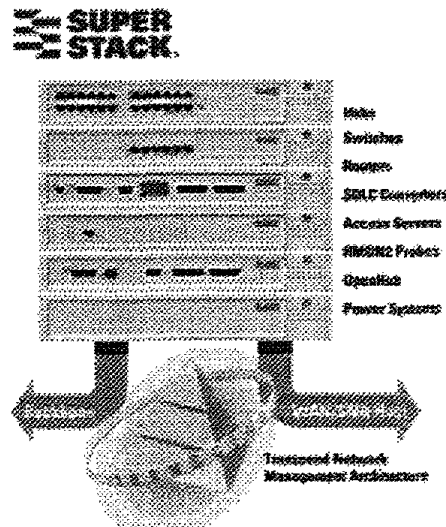
ATM is an established LAN backbone technology that offers significant benefits to larger organizations by providing tight integration between LAN and WAN environments and offering high levels of resilience and redundancy. In the LAN environment, OC-3c (155 Mbps) and OC-12c (622 Mbps) connections are used to communicate across the network. While these connections do not provide the raw bandwidth of Gigabit Ethernet, ATM provides alternative methods for delivering effective backbone solutions, such as Quality of Service (QoS), which guarantees bandwidth to applications. The control offered by ATM enables the deterministic delivery of applications and services in complex network environments.

300693

Layer 3 Switching

Intranets and extranets, while proving indispensable for companies of all sizes, are also causing new traffic management problems. Hypertext links between servers and e-mails create any-to-any traffic that are overwhelming legacy LAN routers. As a result, companies are experiencing more bottlenecks between subnetworks. Layer 3 switching solves these intranet bottleneck problems by embedding classical routing in the switch hardware that routes traffic at high speeds while intelligently isolating faults, containing broadcast traffic, and providing seamless subnet/VLAN connections.

Technology Supported for SuperStack II Switches

[illegible]

SuperStack® II Systems

The 3Com SuperStack® II system gives you a flexible, cost-effective connectivity solution for local, wide area, and SNA networks. You can combine diverse technologies and network services in one stacked system, strengthen it with uninterruptible and redundant power systems, and manage it all with Transcend® network management and control solutions.

As an important part of the 3Com Transcend Networking framework, SuperStack II systems will meet your evolving network needs—futureproofing your network investment.

A single SuperStack II system provides connections for a range of network environments and protocols: Ethernet, Fast Ethernet, Layer 3 switching, Gigabit Ethernet, Token Ring, FDDI, ISDN, X.25, Frame Relay, and ATM. Depending on your needs, you can build SuperStack II systems for virtually any network environment. Capabilities include:

- Hubs for flexible workgroup connectivity that feature SNMP, RMON, and Web-based management
- Industry-leading physical layer support for Token Ring networks, including Token Ring switching
- Full SNMP, RMON, and Web-based management for Ethernet, Fast Ethernet, Gigabit Ethernet switches, as well as a dedicated RMON-1/RMON-2 probe
- Full range of switches to increase performance in high-speed client/server LANs
- Full, multiprotocol network access for telecommuters or users at other off-site

- Full, multiprotocol network access for telecommuters or users at other off-site locations
- Routing between central site and branch offices using innovative Boundary Routing® architecture or conventional routing software for multiple WAN choices, including ISDN
- SNA-to-LAN conversion linking local and remote offices to an SNA host system
- Choice of power systems to ensure uninterrupted network operation

For smaller offices of fewer than 20 users, our OfficeConnect® products can be used to complement SuperStack II systems.

Features Supported for SuperStack II Switches

Features

Stackability

Four SuperStack II Switch 1100 or Switch 3300 units can be interconnected to form a stack that offers unrivaled performance and management features.

Each unit has a built-in connector at the rear of the unit called the matrix port. Two units can be connected back-to-back with a SuperStack II Switch matrix cable. To connect more than two units, a SuperStack II matrix module can be inserted into the high-speed module slot of one of the units in the stack, and a matrix cable can be used to connect to each switch in the stack.

Stacking provides the user with a plethora of benefits. These include the ability to manage in excess of 100 ports as a single logical entity. Configuration is therefore faster and simpler. Stacking also provides the user with the optional resilient IP addresses across the stack. Thus if a failure should occur, the resilient IP address can be used for management stacking using the SuperStack II Switch matrix module and cable, keeping front panel ports free and increasing the number of matrix ports in an aggregated system.

Management

Transcend network management

All SuperStack II switches are managed by 3Com's Transcend network management and control solutions. Transcend solutions give you end-to-end visibility and control over all devices in your network with two levels of management: 1) technologies, such as embedded SmartAgent® software and RMON, within 3Com devices throughout the network, and 2) centralized highly automated applications at the network center for monitoring, configuring, and troubleshooting all devices in the network.

Web-based management

Manage your switches with any Web browser, either through direct or dial-up connection or across the LAN. This delivers ease of use and accessibility to network management personnel and reduces in-service costs, but still with full security.

Security—Disconnect Unauthorized Device (DUD)

LAN security architecture with DUD automatically disconnects unauthorized devices from the LAN.

300695

Roving Analysis Port (RAP)

RAP allows a network analyzer attached to any unit in a stack to monitor any of the switch ports or virtual LANs (VLANs) in the stack. It also minimizes the time required for problem determination and resolution and maximizes switch uptime, thereby lowering your cost of ownership.

RMON support

Transcend software's powerful combination of RMON (Remote Monitoring, a superset of SNMP MIB II) and embedded Smart Agent software reduces the processing burden on your management station, minimizes network traffic, and saves time by automatically monitoring and analyzing your network. RMON tells you at a glance how the network is performing and who is using it the most. And Transcend software gives you the added benefit of RMON features in your network without the processing and memory costs usually associated with RMON. See the At-a-Glance RMON Support table for details on RMON groups supported by SuperStack II switches.

Class of Service (CoS)

CoS can be defined simply as a method for prioritizing various traffic types. 3Com switches can support two methods of enabling CoS on Ethernet networks. The first method is IEEE 802.1D (incorporating 802.1p), which enables eight levels of prioritization; and the second method is 3Com's innovative PACE® technology, which allows the user to specify certain applications as high priority. A hardware feature, dual queues, is used to exploit these traffic prioritization schemes; the dual queues function—required for CoS—will automatically enable a second port buffer for high-priority traffic thereby allowing the traffic to bypass lower priority data for faster processing within the switch.

Traffic Management***Flow Control***

Flow control is an essential switch feature that eliminates dropped packets on congested ports. To provide switch application flexibility, 3Com switches support flow control schemes suited to both full- and half-duplex environments. **Intelligent Flow Management (IFM)** is a solution designed to work in half duplex, for example, a hub aggregation application. A solution using **IEEE 802.3x** is also supported and designed for full-duplex connections, such as desktop switching; this method of flow control is set automatically using the auto-sensing features of SuperStack II switches.

Broadcast traffic control

Traditional Ethernet switches suffer from the threat of broadcast storms that can potentially bring networks to a halt. However, all SuperStack II switches can be configured with broadcast storm protection to limit the number of broadcast packets allowed to be forwarded by each port. This allows the SuperStack II switches to offer the security of broadcast storm protection normally associated with a router while also providing the protocol independence of a switch.

Network Availability***Backup power supplies***

3Com gives you all the choices you need to ensure constant power to your stackable switches. Both the ARPS and the UPS work with any SuperStack II switch. The ARPS is ideally suited as a backup for individual power supplies in the SuperStack II units. The UPS fully protects your SuperStack II system from the effects of brownouts or spikes that occur in outside power lines.

Resilient links

3Com's simple and flexible resilient links technology ensures fault tolerance via redundant connections to other network devices.

Spanning tree

Support for the industry-standard IEEE 802.1D (incorporating 802.1p) spanning tree protocol is provided as an alternative to resilient links. This protects against network loops and can be used to provide redundant network paths.

300696

Port trunking

Port trunking establishes backbone links by treating multiple parallel links as a single network pipe. Trunking also provides link redundancy; traffic on any failed link comprising a network trunk automatically switches over to the other links in the trunk.

VLANs

VLANs allow PCs, workstations, and other resources, including printers and file servers, to be organized into logical, broadcast domains so that only devices within the same domain can communicate with each other. 3Com switches allow users to implement VLANs on their network using one of two schemes: IEEE 802.1Q, including GVRP, which enables the auto-learning of VLANs, or 3Com's VLT. Both methods allow for the configuration of VLANs based on ports and/or MAC addresses for maximum flexibility and security. For 802.1Q VLANs, a port on a switch can be assigned to a VLAN; all other switches learn about that VLAN when the switches automatically communicate that knowledge via the GVRP protocol.

Switches supporting both VLAN schemes can be used to provide seamless migration from VLT to IEEE 802.1Q environments that preserve investment in current LAN developments and equipment.

Layer 3 Support***Multicast filtering using IGMP snooping***

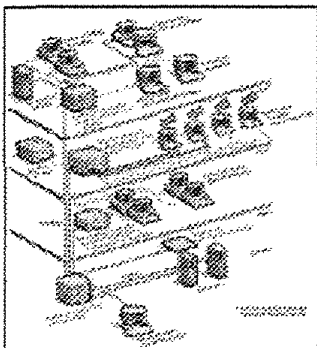
Multicast filtering enables the automatic configuration of filters for IP multicast traffic, such as video and audio broadcasts, allowing advanced multimedia applications to be delivered easily to the workgroup.

Fast IP

Fast IP is 3Com's standards-based cut-through routing solution for all types of legacy routing network backbones. This reduces traffic flow through router bottlenecks and maximizes performance by utilizing the switched infrastructure.

Layer 3 Switching

Layer 3 switching is the implementation of routing protocols in leading-edge ASIC technology. Routing performance is dramatically and cost effectively boosted to enable the widespread deployment of intranets (IP-based networking).

Product Configurations (Diagrams)**Fast Ethernet LAN and WAN connectivity**

A medium-sized corporation supporting a mixture of switched and shared workgroups has a central Fast Ethernet backbone.

300697

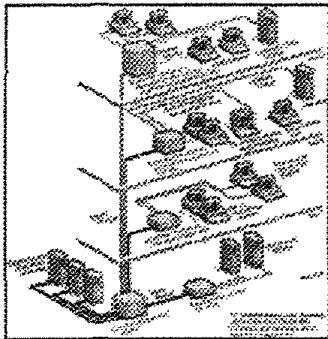
In the basement, a stack of SuperStack II Switch 3300s provides Fast Ethernet 10/100 Mbps links to the floors and 10/100 connections for local servers, and it also provides the ability to scale to Gigabit Ethernet when needed. The entire network is managed at the Transcend network management console or via Web-based management at any browser. Intranet traffic is managed simply and cost effectively when a SuperStack II Switch Layer 3 module is plugged into a

SuperStack II Switch 3300.

On the first floor, a stack of SuperStack II Switch 1100s connects to a 10 Mbps PS Hub 40 and provides each segment with 10 Mbps bandwidth.

On the second floor, the SuperStack II Dual Speed Hub 500 with a mixture of 100 Mbps and 10 Mbps users is connected to a switched 100 Mbps backbone via the data center SuperStack II Switch 3300 stack.

On the third floor, a SuperStack II Switch 1100 and 3300 stack provides dedicated switched 10 Mbps and 10/100 Mbps to power users for transferring large files and multimedia traffic.

**Gigabit Ethernet LAN and WAN connectivity**

An organization supporting a mixture of 10/100 Mbps switched and shared desktop connections has migrated to a Gigabit Ethernet backbone.

3Com has taken an early lead in the Gigabit Ethernet market by providing the ability to utilize this new high-speed technology while protecting your existing network infrastructure investment.

In this configuration, the SuperStack II system in the basement comprises a Switch 9300, a Switch 3900, and an Advanced Redundant Power System for added resilience. The Switch 9300 provides the Gigabit Ethernet switching backbone and links to Gigabit Ethernet servers while the Switch 3900 provides unconstrained access to a large Fast Ethernet server farm. This configuration provides the fastest backbone solution and fastest server access for all floors.

On the first floor, the Switch 3900 provides line-rate services to power users directly connected to switched Fast Ethernet ports. The network is managed at the Transcend network management console.

On the second floor, the Switch 3300 and Switch 1100 provide network connectivity to switched 10 Mbps and 100 Mbps users, and the use of an optional SuperStack II Switch 1000BASE-SX module provides Gigabit Ethernet support.

On the third floor, the Switch 3300 provides line-rate services to power users on switched Fast Ethernet as well as switched 10 Mbps services to less demanding users, and connects shared 10 Mbps and 10/100 hubs to the Gigabit Ethernet backbone.

Free! 'Try Before You Fly'
Evaluation Promotion

300698

SuperStack II Switch 1100 and SuperStack II Switch 3300 for 10/100 Mbps Ethernet and Fast Ethernet

10/100 Mbps Ethernet

10/100 Mbps



If you're looking for advanced switching solutions with the unsurpassed combination of price

and performance for supporting 10 Mbps and 10/100 Mbps traffic, the new SuperStack II Switch 1100 and SuperStack II Switch 3300 are the right solutions for you.

The SuperStack II Switch 1100 and SuperStack II Switch 3300 represent the latest generation of 3Com stackable switching technology. Now you can scale performance seamlessly with interswitch communication that enables a stack of SuperStack II Switch 1100 switches or SuperStack II Switch 3300 switches (or a mix of both in the same stack) to perform and be managed as a single entity. Multiple switches can even share a single IP address.*

The advanced stackability of the new SuperStack II Switch 1100 and SuperStack II Switch 3300 eliminates the need to communicate through network ports.

Each switch has a built-in connector at the rear of the unit called the matrix port. Two units can be connected back-to-back with a SuperStack II Switch matrix cable (3C16965). To connect more than two units, a SuperStack II Switch matrix module (3C16960) can be inserted into the high-speed module slot of one of the units in the stack, and a SuperStack II Switch matrix cable can be used to connect to each switch in the stack. This enables you to scale up to one larger virtual switch of up to 110 switched ports. Interswitch links are created through the high-performance SuperStack II switch module that connects the switches to deliver 4 x 1 Gbps links between switches; this ensures high-speed communication with no bottlenecks between switches. Plus, it does not consume valuable Fast Ethernet or Gigabit Ethernet ports.

The new SuperStack II Switch 1100 and SuperStack II Switch 3300 provide support for a range of backbone connections options, including Fast Ethernet, Fast Ethernet over fiber, Gigabit Ethernet, Layer 3 switching, and ATM via an optional high-speed module.

**Multiple IP addresses can be supported to provide resilient stack management.*

SuperStack II Switch 1100

Front view of 12 Port



12 switched 10BASE-T/B3-45 ports

Two 10/100 Mbps
Fast Ethernet ports

Free! 'Try Before You Fly'
Evaluation Promotion

Front view of 24 Port



24 switched 10BASE-T/B3-45 ports

Two 10/100 Mbps
Fast Ethernet ports

Back view



AC
connection

Advanced
Redundant
Power System
connection

RS 232
port

Optional
high-speed
module slot

Slot for optional
16 Mbps
transceiver
module

Matrix
port

300699

SuperStack II Switch 3300

Front view of 12 Port

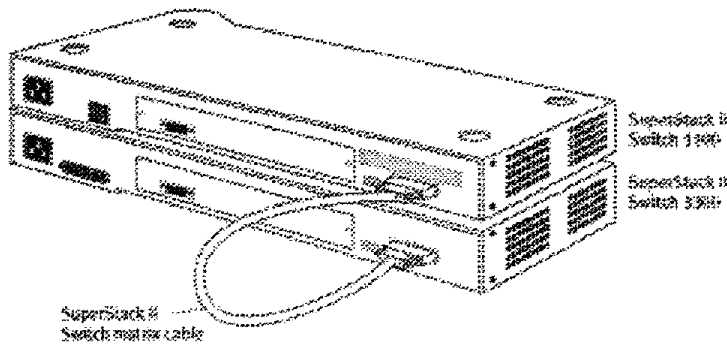
12 switched 10/100BASE-TX ports

Front view of 24 Port

24 switched 10/100BASE-TX ports

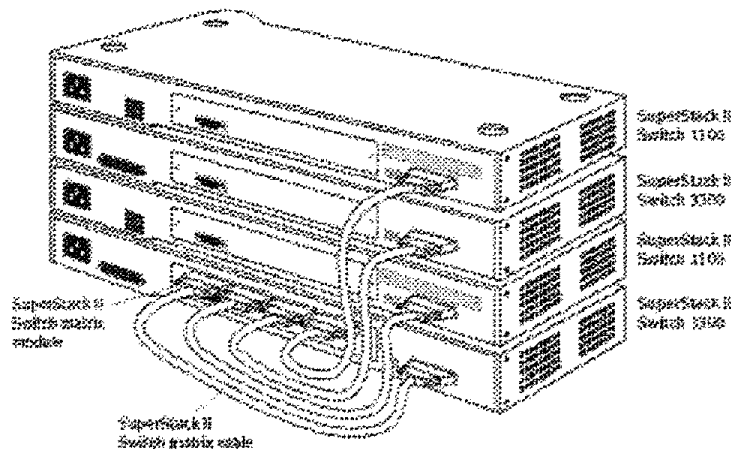
Back view

AC connection

Type 2
RJ45
connectorRS 232
portOptional
high-density
module slotMatrix
port

The SuperStack II Switch 1100 and Switch 3300 can be stacked up to two units high with just the SuperStack II Switch matrix cable.

- With a low-cost cable, users can double the port density with a 1 Gbps link between switches.
- Mix and match SuperStack II Switch 1100 and Switch 3300 to meet customer needs.
- Stack up to two units high—supporting up to 56 switched ports.



The SuperStack II Switch 1100 and Switch 3300 can be stacked up to four units high by using

300700

the SuperStack II Switch matrix module and SuperStack II Switch matrix cables.

- *Mix and match Switch 1100 and Switch 3300 within the stack to meet customer needs.*
- *Stack up to four units high—supporting up to 110 switched ports.*
- *SuperStack II Switch matrix module supports 4 x 1 Gbps links between switches to create high-density switches without wasting Fast Ethernet or Gigabit Ethernet ports.*

About the Switches

The SuperStack II Switch 1100 is perfect for desktop connectivity, and its ability to scale to larger configurations makes it equally suited for handling hub aggregation. A single device can support up to 6,000 MAC addresses. Likewise, the SuperStack II Switch 3300 is suitable for handling desktop, hub, and switch aggregation in large networks. A single device can support up to 12,000 MAC addresses.

The SuperStack II Switch 1100 is available in 12- and 24-port versions and features two built-in auto-sensing 10/100 Fast Ethernet ports; the SuperStack II Switch 3300 is available in 12- and 24-port versions. All models have matrix port on the rear of the unit that enables high-speed connection to other SuperStack II Switch 1100 and Switch 3300 units. This eliminates the bottlenecks caused by interconnecting switches with Fast Ethernet ports. What's more, the stacked switches can be managed as a single entity and share a single IP address.

As with other SuperStack II switches, the new SuperStack II Switch 1100 and Switch 3300 feature auto-sensing 10/100 ports that adjust for 10BASE-T and 100BASE-TX attached devices. Both switches automatically provide full-duplex/half-duplex capability on all ports to boost bandwidth for servers and power users. Plus, they both help you implement advanced policy-based management across the network with features such as support for Fast IP, RMON, IGMP snooping, IEEE 802.1D (incorporating 802.1p prioritization), and IEEE 802.1Q standards-based and VLT VLANs.

Key new features in the SuperStack II Switch 1100 and Switch 3300 include the following:

- Matrix port for high-speed connections between switches
- Ability to mix and match switches in a single stack
- Management of a switch stack as an entity; single IP address per stack
- Layer 3 capabilities, including Fast IP and IGMP snooping
- Web browser interface to locate management and configuration functions
- Full support for resilient links and spanning tree
- Optional SuperStack II redundant power supplies
- Dual queues to facilitate traffic prioritization
- Multicast filtering using IGMP snooping/GMRP
- Elastic port buffering enables on-the-fly allocation of memory for port buffers for automatic performance optimization based on network traffic
- Flow control improves performance and minimizes packet loss under heavy network loading
- VLT VLAN tagging protects investment infrastructure
- 802.1Q standard-based VLANs with GVRP support to facilitate dynamic VLAN membership

SuperStack II Switch 1100 and SuperStack II Switch 3300 Optional High-Speed Accessories



300701

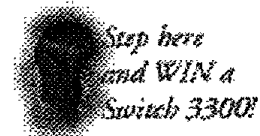
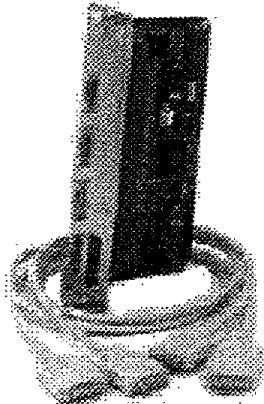
SuperStack II Switch Matrix Module and Matrix Cable

The SuperStack II Switch matrix module and matrix cable let you mix and match SuperStack II Switch 1100s and 3300s to improve throughput, share downlinks, and ease management. Use the matrix cable to connect two Switch 1100s or Switch 3300s and the matrix module to connect

up to four switches* while conserving Fast Ethernet ports. The matrix module's 4 x 1 Gbps backplane provides a 1 Gbps link between switches. Ultralow latency (maximum 300 ns) and hardware flow control ensure top performance at low cost. The entire stack can be managed as a single entity.

- Any switch port can be configured to support roving analysis across the stack for greater visibility into traffic flows and RMON data; the module supports IEEE 802.1D and 802.1Q standards for VLANs and Ethernet Class of Service (CoS).

**Each unit in a stack requires a matrix cable, including the unit that holds the matrix module.*



SuperStack II Switch matrix module and SuperStack II Switch matrix cable

SuperStack II Switch 100BASE-FX Modules

The SuperStack II Switch 100BASE-FX module adds a fiber Fast Ethernet backbone link to your switched workgroup. The easy-to-install dual module is an excellent choice for resilient connections in mission-critical networks or when multiple fiber backbone connections are needed to and from the stack. A single high-speed backbone link can be shared by multiple units in a stack.

- Full-duplex Fast Ethernet provides 200 Mbps throughput and 2 kilometers distance on fiber.

SuperStack II Switch 1000BASE-SX Module

The SuperStack II Switch 1000BASE-SX module supports high-performance, fault-tolerant interworkgroup and workgroup-to-backbone connection. The easy-to-install module provides a full-duplex 1000BASE-SX multimode fiber interface to another Fast Ethernet or Gigabit Ethernet switch over distances up to 275 meters.

- Full-duplex Gigabit Ethernet provides up to 2 Gbps throughput, eliminating network bottlenecks.
- The module supports both 802.1D spanning tree and resilient links.

SuperStack II Switch Layer 3 Module

The SuperStack II Switch Layer 3 module lets you cost effectively add routing capabilities to your switched 10/100/1000 Mbps workgroups to boost intranet performance and off-load legacy routers of LAN traffic. SuperStack II Switch 1100, 3300, and 3300 FX switches with the easy-to-install Layer 3 module seamlessly route IP traffic between subnets in addition to switching IPX, AppleTalk, and other legacy protocols. One SuperStack II Layer 3 module can manage routing for the entire stack.

300702

- Extensive standards-based routing protocol support (including RIP and OSPF) enables the switches to operate in any networking environment.
- Distance Vector Multicast Routing Protocol (DVMRP) optimizes multimedia traffic delivery.

Optional High-Speed Modules for Your Existing SuperStack II Switches

SuperStack II Desktop Switch, SuperStack II Switch 1000, and SuperStack II Switch 3000 Family

SuperStack II Switch Gigabit Ethernet SX Module

These modules provide a cost-effective, seamless migration to higher speed networking. By adding the SuperStack II Switch Gigabit Ethernet SX module to your existing SuperStack II Switch 3000, Switch 1000, or Desktop Switch, you can integrate existing SuperStack II switches with high-speed backbones. Supporting high-bandwidth, high-performance interworkgroup and workgroup-to-backbone Gigabit Ethernet connectivity, you can interconnect multiple switches without creating traffic bottlenecks. Plus, you get 2 Gbps (full-duplex) bandwidth—10 times the bandwidth of Fast Ethernet—without changing your existing switching platforms. The SuperStack II Switch Gigabit Ethernet SX module complements the 3Com SuperStack II Switch 9000 so you can implement an end-to-end Gigabit Ethernet network solution—from the desktop to the backbone.

SuperStack II Switch ATM OC-3c Module

The ATM OC-3c module provides support for the ATM Forum standards for LAN Emulation (LANE 1.0) allowing existing Fast Ethernet and Ethernet LAN users to communicate transparently over a high-speed ATM backbone. Full-duplex operation gives wire speeds of 310 Mbps, virtually eliminating network bottlenecks. Low latency of 68 microseconds from Ethernet to ATM provides increased network performance. The ATM OC-3c module absorbs traffic peaks to prevent packet loss due to the deep 40,000 cells (2 MB) buffer.

Support for the ATM Forum LANE standard allows existing LAN users to communicate over the high-speed ATM network and provides investment protection for existing Ethernet NICs, hubs, switches, and routers.

SuperStack II Switch 3300 FX

High-Speed Fiber Solution

Secure & Scalable

Expanding the award-winning SuperStack II 1100/3300 switch platform, the SuperStack II Switch 3300 FX meets the needs of government and financial institutions that require the security and redundancy of fiber cabling support. The switch features eight multimode fiber switched Fast Ethernet ports and two autosensing 10/100BASE-TX Fast Ethernet ports. A truly stackable solution, up to four SuperStack II Switch 3300 FX units or a mixture of SuperStack II Switch 3300 FX and SuperStack Switch 1100 or 3300 units can be stacked together using the SuperStack II matrix module and matrix cable to create a single, manageable, high-density fiber aggregation or desktop solution. Managing the entire stack as one system alleviates network management complexity and reduces overhead administrative costs. Built-in fault tolerant features for mission-critical environments include resilient links, spanning tree support, and the SuperStack II advanced redundant and uninterruptible power systems; while support for up to 12,000 MAC addresses makes this an ideal switch for large, demanding LAN environments.

- Matrix module delivers 4 x 1 Gbps bandwidth within the switch stack, eliminating traffic bottlenecks; the entire stack can be managed as a single entity, and downlink resources can be easily shared
- Support for IEEE 802.1Q standards-based VLANs and 802.1D (incorporating 802.1p prioritization) brings enhanced multimedia support and improved data throughput
- Fast IP and IGMP snooping provide Layer 3 capabilities, increasing performance of routed networks and improving delivery of multimedia applications
- Intelligent Flow Management (IFM) and 802.3x congestion control features help avoid

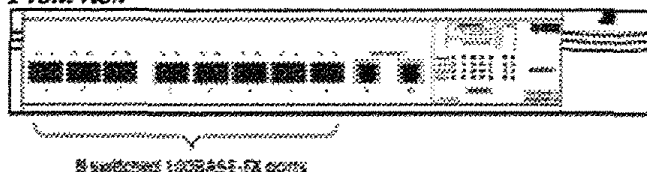
*Stop here
and WIN a
Switch 3300!*

300703

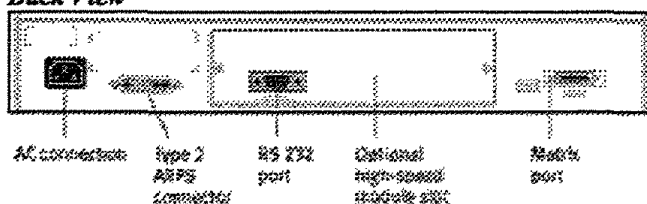
- packet loss and performance under heavy load conditions
- Web-based management provides access to management and configuration functions from anywhere on the network simplifying management tasks and reducing in-service costs

SuperStack II Switch 3300 FX

Front view



Back View



SuperStack II Switch 3800

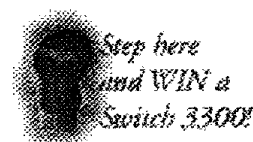
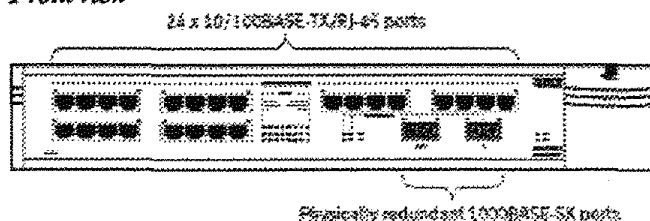
10/100/1000 Mbps Ethernet Layer 3 Switching

The SuperStack II Switch 3800 offers affordable leading-edge Layer 3 switching technology for 10 times the performance of intranets. Wire-speed Layer 3 switching (IP routing) and Layer 2 switching are embedded in ASICs to forward at nonblocking speed any-to-any intranet traffic while broadcast/multicast traffic and fault propagation are kept under control in appropriate subnetworks.

The SuperStack II Switch 3800 not only aggregates the traffic from Ethernet and Fast Ethernet workgroups to a server farm or a corporate backbone through an optional Gigabit Ethernet high-speed link, but it removes router bottlenecks that occur in corporate networks when high-speed any-to-any intranet traffic chokes software-based legacy routers.

SuperStack II Switch 3800

Front view

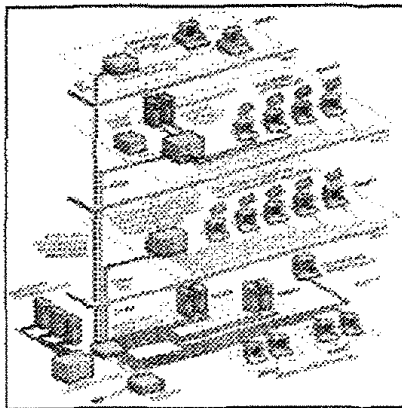


Key features include:

- 24 10/100 Mbps Ethernet/Fast Ethernet autosensing ports
- One Gigabit port (1000BASE-SX or 1000BASE-LX) enabled by an optional SuperStack II Switch 3800 GBIC (Gigabit Interface Connection). A second GBIC can be plugged in to provide additional physical resilience.
- Full line-rate nonblocking routing performance on all ports (over 5 million IP packets per

300704

- second and 8.7 Gbps throughput)
- Support for standards-based routing protocols: RIP/RIP v2
- Support for up to 12,000 MAC addresses for handling networks of virtually any size
- Elastic port buffering to enable on-the-fly allocation of memory for automatic performance optimization based on network traffic
- IEEE 802.3x flow control on all full-duplex ports to improve performance and minimize packet losses
- Full VLANs implementation:
 - Port and tagged VLANs (802.1Q)
 - Protocol-based VLANs to allocate bandwidth and enforce management policies among different protocols (e.g., IP, IPX, NetBIOS, DECnet)
- User-definable packet filters to control traffic flows
- Support for spanning tree per VLAN
- Class of Service embedded in ASIC—PACE technology, 802.1D (incorporating 802.1p)
- RMON support for four groups
- Simplicity and scalability of 10/100/1000 Ethernet in the industry-leading SuperStack II system architecture



For a dramatic performance boost in corporate routed networks, the SuperStack II Switch 3900 delivers wire-speed IP routing embedded in ASIC technology in addition to 10/100/1000 Mbps Layer 3 switching.

It offloads the routing of intranet traffic from slow legacy routers while keeping under control broadcast/multicast traffic and fault propagation in appropriate subnetworks.

SuperStack II Switch 3900 and SuperStack II Switch 9300 10/100 Mbps to 1000 Mbps Gigabit Ethernet Switching

The SuperStack II Switch 3900 and the SuperStack II Switch 9300 (Gigabit Ethernet switch) constitute an industry-leading solution for high-density 10/100 Ethernet to Gigabit Ethernet switching.

SuperStack II Switch 3900

SuperStack II Switch 9300

SuperStack II Switch 3900

The SuperStack II Switch 3900 delivers full line-rate performance (over 9.8 millionpps of switching performance) for up to 36 10/100 Mbps ports and from one to three 1000 Mbps ports. Multiple Gigabit Ethernet uplinks can be trunked together to deliver an uplink with 3 Gbps of bandwidth.

The SuperStack II Switch 3900 is available in two versions: a 24- and 36-port 10/100 Ethernet/Fast Ethernet switch. Both have one integral 1000BASE-SX port and two Gigabit Ethernet expansion slots. The rear-mounted expansion slots accept optional Gigabit Ethernet modules available for either 1000BASE-SX or 1000BASE-LX both via SC connectors. The

300705

1000BASE-SX option supports multimode fiber links, while the 1000BASE-LX option supports single-mode fiber. The 1000BASE-LX option supports multimode fiber when used in conjunction with a conditioned launch cable.

SuperStack II Switch 3900

Front view of 24 Port



24 switched 10BASE-T/100BASE-TX RJ-45 ports

Front view of 36 Port



36 switched 10BASE-T/100BASE-TX RJ-45 ports

Back view



AC connection
Advanced Redundant Power System Type 1 connection
Slot for optional Gigabit Ethernet modules
Built-in 1000BASE-SX Gigabit Ethernet ports
Console port (management of)

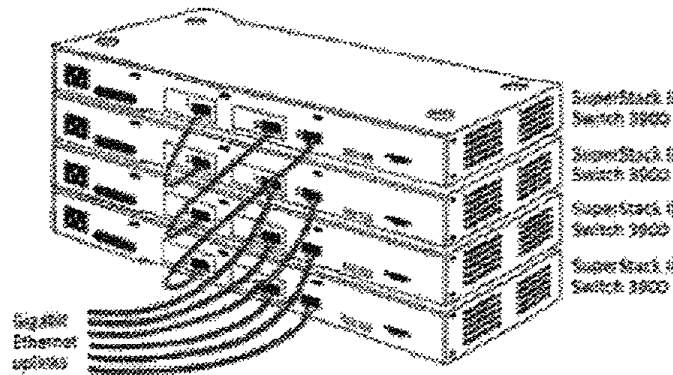
Step here
and WIN a
Switch 3300!

Key features in the SuperStack II Switch 3900 include the following:

- Supports up to 16,000 MAC addresses
- Multicast filtering using IGMP snooping*
- Multicast throttling limits broadcasts and multicasts on a per-port basis
- Support for IEEE 802.3x flow control on all full-duplex ports
- Roving Analysis Port (RAP) for copying data from any port to another port with a network analyzer attached
- RMON support for four groups
- Fully standards-based 802.1Q VLANs, including GVRP* support for automatic VLAN configuration distribution
- IEEE 802.1D (incorporating 802.1p)* Class of Service support and dual priority queuing
- Web browser interface for management and configuration functions
- Full line-rate nonblocking switching performance (6.6 Gbps throughput and over 9.8 million pps frame processing)
- Support for multiple Gigabit Ethernet uplinks
- Support for trunking (multiple parallel active links) on both Fast Ethernet and Gigabit Ethernet ports (up to six ports per trunk group and four trunks per unit)
- Resilient links
- Full-duplex support on all Gigabit and Fast Ethernet ports
- All Fast Ethernet ports support 10/100 and full-/half-duplex operation with autonegotiation (IEEE 802.3x)

*Free software upgrade available Q3CY99.

300706



Four SuperStack II Switch 3900s equipped with additional Gigabit Ethernet expansion modules can be grouped yielding a configuration of 144 10/100 Ethernet ports with six Gigabit Ethernet uplinks.

- Interconnect four units with dedicated Gigabit Ethernet links.
- Two additional Gigabit Ethernet option slots per switch yield six additional Gigabit Ethernet ports for uplinks or additional bandwidth.

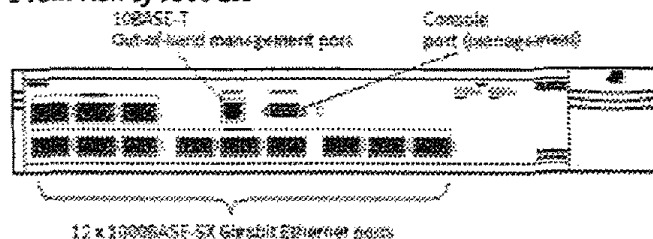
SuperStack II Switch 9300

The SuperStack II Switch 9300 enables practical, cost-effective, and high-performance deployment of Gigabit Ethernet as an effective interswitch, switch-to-server, and general purpose backbone technology. As the highest density Gigabit Ethernet (1000/1000 Mbps) switch available in a SuperStack II package, the SuperStack II Switch 9300 delivers full line-rate switching between its 12 Gigabit Ethernet ports to support 17.85 million pps forwarding rate and 12 Gbps full-duplex throughput. Multiple Gigabit Ethernet ports can be trunked together to deliver up to 6 Gbps interswitch link. Full line-rate Gigabit Ethernet switching is supported on all ports via 25.6 Gbps switching fabric.

The SuperStack II Switch 9300 is available in three versions: a fixed 12-port fiber optic (12 x 1000BASE-SX) Gigabit Ethernet switch; a fixed 12-port fiber optic (10 x 1000BASE-SX and 2 x 1000BASE-LX) Gigabit Ethernet switch; and a fixed 12-port fiber optic (12 x 1000BASE-LX) Gigabit Ethernet switch. With the SuperStack II Switch 9300, you can interconnect high densities of Fast Ethernet switches that are attached to either dedicated desktops or shared segments and high-bandwidth network resources, such as servers.

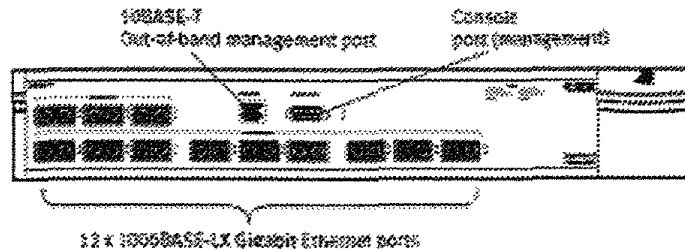
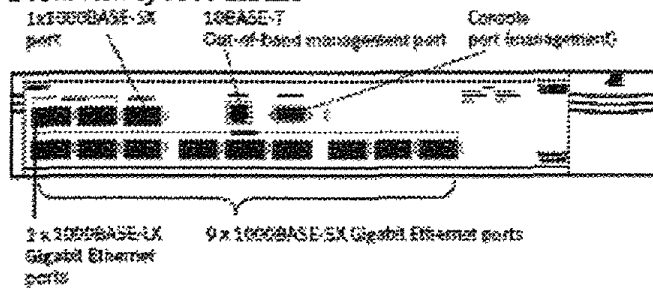
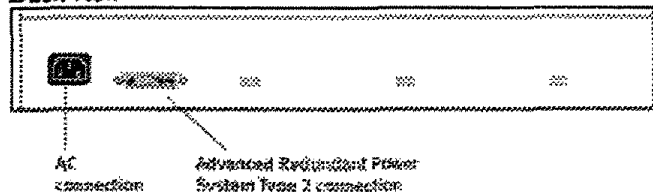
SuperStack II Switch 9300

Front view of 9300 SX



Front view of 9300 LX

300707

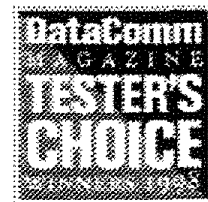
**Front view of 9300 SX/LX****Back view**

Free! "Try Before You Fly"
Evaluation Promotion

Key features in the SuperStack II Switch 9300 include the following:

- Supports up to 16,000 MAC addresses
- Multicast filtering using IGMP snooping*
- Multicast throttling limits broadcasts and multicasts on a per-port basis
- Support for IEEE 802.3x flow control on all full-duplex ports
- Roving Analysis Port (RAP) for copying data from any port to another port with a network analyzer attached
- RMON support for four groups
- Fully standards-based 802.1Q VLANs, including GVRP* support for automatic VLAN configuration distribution
- IEEE 802.1D (incorporating 802.1p)* Class of Service support and dual priority queuing
- Web browser interface for management and configuration functions
- Resilient links
- Full line-rate nonblocking switching performance (12 Gbps throughput and over 17.8 million pps frame processing)
- Support for trunking (multiple parallel active links) on Gigabit Ethernet ports (up to six ports per trunk group and four trunks per box)
- Full-duplex support on all Gigabit Ethernet ports

*Free software upgrade available Q3CY99.





[News/Events](#) | [Partners](#) | [Technology](#) | [Markets](#) | [Products](#) | [Support](#) | [Inside 3Com](#)

[Home](#) | [Log In](#) | [Search](#) | [Feedback](#) | [Site Map](#) | [Site Features](#) | [Document Center](#) | [Shop](#) | [Legal](#)

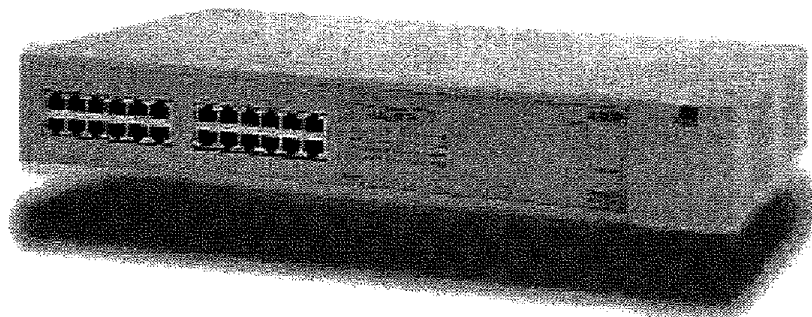
[Copyright © 1998 3Com Corporation. All rights reserved.](#)

300709

SuperStack® II Switch 3300 XM

Affordable, stackable 10/100 switching solution for boosting performance to desktop users and server resources

Breakthrough pricing and seamless stackability make high-performance 10/100 switching practical for every size business.



Key Benefits

Lowest cost 10/100 switching solution. Delivers the performance and flexibility of 10/100 switching to boost performance to desktop users and critical server links.

Latest generation stacking technology. Deliver high-speed communication (1 Gbps) between links without consuming valuable network ports, and enables multiple switches to be managed as a single logical device.

Lower cost of ownership. Add capacity without wasting ports, adding IP addresses, or increasing administrative overhead.

Robust feature set. Runs the same feature-rich software as the SuperStack II Switch 3300, including 802.1 prioritization, IGMP snooping, and 802.1Q VLAN support.

Expandable to support growth. Mix and match the SuperStack II Switch 3300 XMs and SuperStack II Switch 3300s to create up to 96 ports, and add high-speed Gigabit Ethernet or ATM connections to backbone switches.

Simplified network management. Transcend® Network Supervisor provides proactive network monitoring with wizard-based problem solving.

Superior service and support. 3Com's +5 lifetime limited warranty and free technical telephone support ensure worry-free operation.

The SuperStack® II Switch 3300XM is the latest addition to 3Com's family of stackable switching solutions. The SuperStack II Switch 3300XM delivers breakthrough pricing for 10/100 Ethernet/Fast Ethernet switching, saving customers up to 50 percent over comparable competitive solutions. This dramatic cost savings makes it practical and affordable for any size business to take advantage of 10/100 switching to boost performance to resource-constrained desktop users and servers without disrupting existing 10Mbps users.

The SuperStack II Switch 3300XM is also the most economical switch to expand capacity as your business grows. When you stack multiple SuperStack II Switch 3300XMs together or use the SuperStack II Switch 3300XM in combination with the SuperStack II Switch 3300 (which supports multiple high-speed connection options), you still get the lowest cost per port of any stacked solution.

In addition, the SuperStack II Switch 3300 XM is 3Com's latest stackable

switching solution that supports growth without adding administrative overhead. The SuperStack II Switch 3300XM incorporates 3Com's latest generation of stackable switching technology. To add capacity, simply stack multiple SuperStack II Switch 3300XMs together, or mix and match SuperStack II Switch 3300s, SuperStack II Switch 1100s, and SuperStack II Switch 3300FXs. 3Com's advanced stacking technology enables you to connect multiple switches together without consuming valuable network ports or adding expensive IP addresses. A stack of multiple switches can be managed as easily and transparently as a single switch.

Another long-term investment consideration is the backing of 3Com's service and support organization. The SuperStack II Switch 3300XM comes with 3Com's +5 lifetime limited warranty, which includes free advance hardware replacement (3Com will ship a new switch out to you even before you return the old one). For extra assurance, 90 days of free telephone technical support is also included.

300710

Switches

The Optimum Network Performance at the Lowest Price

The price breakthrough and administrative simplicity of the new SuperStack II Switch 3300XM makes it practical and affordable to bring the advantages of 10/100 technology to your company by dramatically lowering the price per port of 10/100 switching—between 30 and 50 percent lower than other solutions on the market.

Higher transmission speeds are needed to serve an ever-expanding array of bandwidth-intensive applications and critical server links. 10/100 Ethernet/Fast Ethernet switching technology is one of the most economical and flexible ways to add bandwidth to congested areas today, while laying the foundation for future growth. With 10/100 technology, you can serve existing 10Mbps users without disruption, while substantially boosting performance for users or resources that require more bandwidth.

Economical Expansion

The SuperStack II Switch 3300XM incorporates the latest in stacking technology developed by 3Com. For the first time, companies can add capacity without complexity or performance penalties, so the long-term cost of ownership of your network infrastructure is lower.

The advanced stacking technology provides interswitch communication through a built-in connector at the rear of the switch, called the matrix port. The switches are connected together through the matrix port using a low-cost, high-speed SuperStack II switch matrix cable. There are numerous advantages to this stacking solution:

- Connecting switches do not consume valuable network ports, ensuring more usable capacity and greater room for growth.
- 3Com's high-speed cable provides 1 full Gbps of bandwidth between switches, so there are no bottlenecks within the switching stack.
- You have complete flexibility to mix and match SuperStack II Switch 3300XMs, Switch 1100s, Switch 3300s, and Switch 3300 FXs in a single stack, matching your network requirements and budget.
- Multiple switches (of any combination) can be managed as simply as though they were a single switch, even sharing a single IP address on the network.

Up to four SuperStack II 10/100 switches can be combined to create a single logical switch of over 100 ports. In addition, by using the SuperStack II Switch 3300 in the stack, you can add a variety of high-speed connection options, including:

SuperStack II Switch 100BASE-FX Module: Provides resilient connections in mission-critical networks.

SuperStack II Switch 1000BASE-SX Module: Provides full-duplex 1000BASE-SX multimode fiber interface to another Fast Ethernet or Gigabit Ethernet switch.

SuperStack II Switch 1000BASE-LX Module: Provides resilient Gigabit uplinks over longer distances.

SuperStack II Switch Layer 3 Module: A single module adds routing capabilities to a 10/100 switching stack, enabling the switches to route IP traffic between subnetworks and switch IPX, AppleTalk, and other legacy protocols.

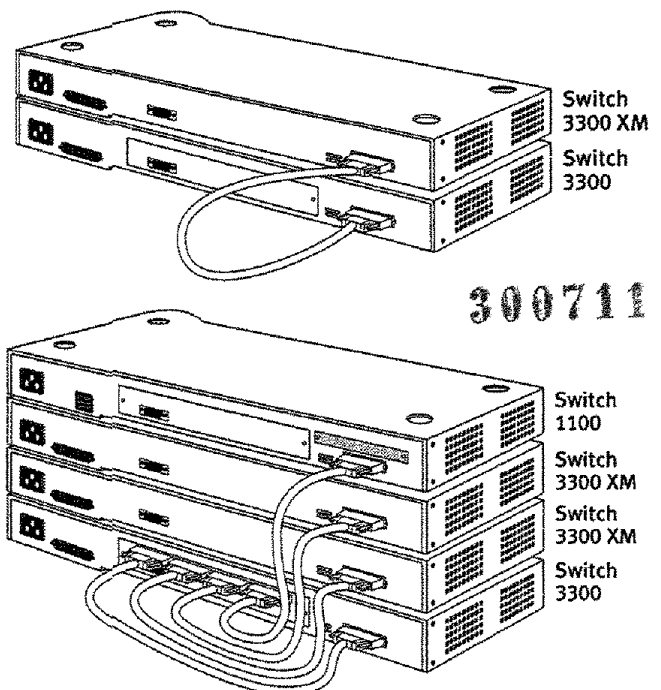
SuperStack II Switch ATM Module: Provides one high-speed ATM port for connection to ATM backbones.

Better Use of Network Bandwidth

The SuperStack II Switch 3300XM does more than make higher speed bandwidth more affordable at the edge of the network, it makes smarter use of that bandwidth. The SuperStack II Switch 3300XM runs the same feature-rich software as the SuperStack II Switch 1100 and 3300, including the ability to implement policy management across the network. Policy-based

The SuperStack II Switch 3300 XM can be stacked up to two units high (or mixed and matched with a SuperStack II Switch 1100 or SuperStack II Switch 3300) using a low-cost, high-speed cable from 3Com that provides a full 1 Gbps pipe for interswitch communications. This stackable solution doubles capacity without consuming network ports on the front of the switches. The two switches are also managed as a single switch, including sharing one IP address.

Up to four SuperStack II switches can be stacked together to add capacity of over 100 ports with the lowest price per port of any 10/100 stackable solution. The stacks can be made up of any combination of SuperStack II Switch 3300 XMs, SuperStack II Switch 1100s, SuperStack II Switch 3300s, or SuperStack II Switch 3300 FXs. The switches are connected with the high-speed cable and a single SuperStack II switch matrix module. As in the smaller configuration, no network ports are wasted to connect the switches, and the four-switch stack can share a single IP address and be managed as a single switch.



management makes more effective use of the bandwidth you have by prioritizing, segmenting, and managing traffic more efficiently. These capabilities include:

802.1p traffic prioritization and multicast filtering using IGMP snooping: Enables multimedia applications to be delivered to the workgroup.

Flow control: Improves performance and minimizes packet loss under heavy network loading. 3Com switches support flow control schemes suited to both full- and half-duplex environments.

Elastic port buffering: Enables on-the-fly allocation of memory for port buffers to optimize performance based on network traffic.

802.1Q VLANs: Segments and secures traffic with standards-based virtual local area network (VLAN) support.

Roving Analysis Port (RAP): Supports the mirroring of traffic from any port in the stack to any other port to allow direct connection of network analyzers.

Broadcast traffic control: Prevents broadcast storms that can consume network bandwidth and disrupt service to users.

In addition to the robust software suite, the SuperStack II switching family provides advanced power supply management to ensure uninterrupted operation for mission-critical operations. The integrated ARPS provides backup for individual power supplies in the SuperStack II units, and the UPS fully protects your SuperStack II system from the effects of brownouts or power surges.

When you stack the SuperStack II Switch 3300 XM with the SuperStack II Switch 3300, you can add uplink connections to a larger core switch, like the 3Com CoreBuilder® 9000 switch. This gives you end-to-end policy management, including traffic prioritization and VLAN support, from the desktop to the core.

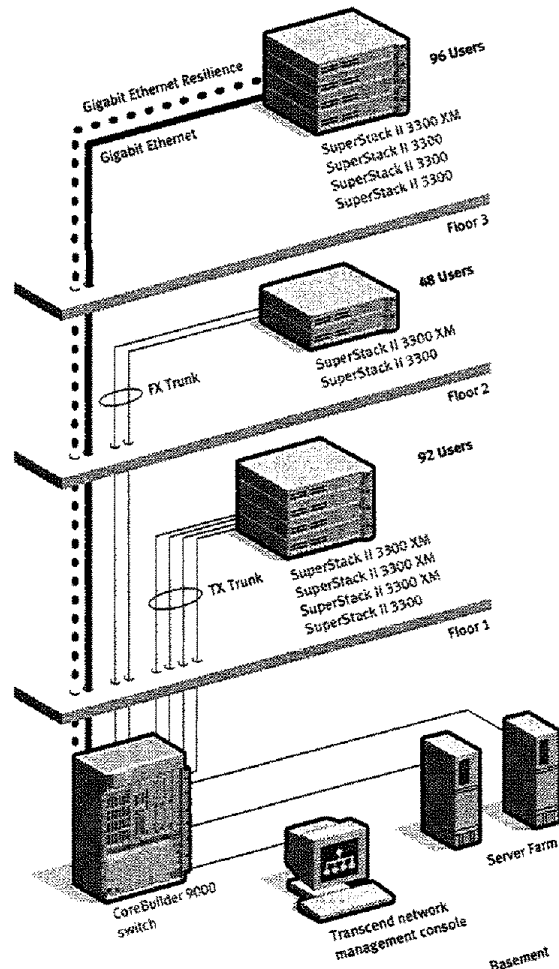
Simplified, Proactive Network Management

The SuperStack II Switch 3300 XM ships with 3Com's new Transcend Network Supervisor, a PC-based application that provides powerful, yet easy-to-use network management tuned to the needs of small-to-medium enterprises. Transcend Network Supervisor greatly simplifies the burden on network administrators with the following capabilities:

- Automatic discovery of network devices
- Proactive identification of problems
- Wizard-driven, graphical user interface
- Automatic interpretation of network data for faster problem resolution

Transcend software also includes Remote Monitoring (RMON) support. RMON tells you at a glance how the network is performing and who is using it the most. Transcend provides all the benefits of RMON without the processing and memory costs usually associated with implementing RMON. 3Com is also the only major vendor to support seven RMON groups, providing a more complete and comprehensive picture of network activity.

Web-based management is also standard on the SuperStack II switches, enabling an administrator to manage the SuperStack II switches through direct or dial-up connection or across the LAN using a standard Web browser with full security. Web-based management makes network troubleshooting and administration easier and reduces support costs.



300712

Specifications

SuperStack II Switch 1100, SuperStack II Switch 3300, SuperStack II Switch 3300 XM, and SuperStack II Switch 3300 FX Management

All switches support SNMP and 3Com Transcend network management applications. All these switches can be managed with a Command Line Interface by connecting a terminal to the serial port or via Telnet, or graphically using the resident Web interface. MIBs supported: New M U MIB (RFC 2239), RMON II Probe Config (RFC 2021), RMON (RFC 1757), RS 232 MIB (RFC 1659), IfStack Table (RFC 1573), Bridge MIB (RFC 1493), SNMP MIB II (RFC 1213) Plus additional SuperStack II MIBs for stacking, security, and resilience.

Standards Compliance

Functional

ISO 8802/3, IEEE 802.3 (Ethernet), IEEE 802.3u (Fast Ethernet), IEEE 802.3x (Flow Control), IEEE 802.1D (incorporating 802.1p), IEEE 802.1Q (Bridging) Safety: UL 1950 2nd Edition, EN 60950:1992/ 3:1995 plus ZB/ZC Deviations, CS 22.2#950, ECM 97, TUV GS Mark will be applied for Mexican NOM and Russian GOST safety approval.

Electromagnetic

EN 55022 Class B, FCC part 15 Class A CS C108.8-M1983, VCCI Class 2, EN 50082-1 (IEC 801 Parts 2-4), EN 61000-3-2, EN 61000-4-5, ENV 50140, ENV 50141, Russian GOST EMC approval (Will be obtained after initial release.)

Environmental

Shock and Vibration: EN 60068 (IEC 68) Protocols: SNMP (RFC 1157), RP (RFC 826), IP (RFC 791), ICMP (RFC 792), IGMP (RFC 1112), UDP (RFC 768), TCP (RFC 793), TFTP (RFC 783)

Ordering Information

SuperStack II Switch 3300 (24 port)	3C16980
SuperStack II Switch 3300 (12 port)	3C16981
SuperStack II Switch 3300 XM (24 port)	3C16985
SuperStack II Switch 3300 FX (8 port)	3C16982

High-Speed Modules and Accessories for SuperStack II Switch 1100, Switch 3300, and Switch 3300 FX

SuperStack II switch matrix module	3C16960
SuperStack II switch matrix cable	3C16965
SuperStack II Switch 100BASE- FX module	3C16970
SuperStack II Switch 100BASE- FX dual module	3C16971
SuperStack II Switch 1000BASE- SX module	3C16975
SuperStack II Switch 1000BASE- LX module	3C16973
SuperStack II Switch Layer 3 module	3C16968

Transcend Network Management

Transcend Network Supervisor (Shipped with SuperStack II managed switches can be downloaded from the Web at www.3com.com/tns)

More SuperStack II Product Information

SuperStack II Baseline switches are the most cost-effective, high-quality, unmanaged switches. For more information, refer to the SuperStack II Baseline Hubs and Switches data sheet, stock no. 400411-002 or the SuperStack II Baseline Family sales brief, stock no. 100457-003.

300713

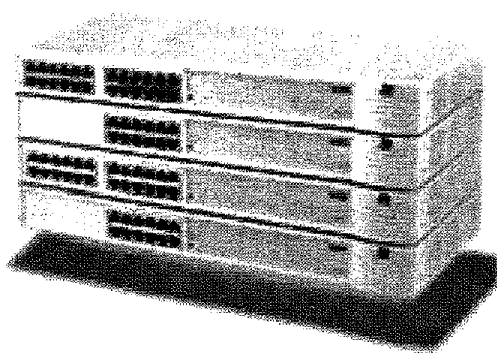
3Com® SuperStack® II

Dual Speed Hub 500 and PS Hub Family

3Com®

The power of 100 Mbps Fast Ethernet with the flexibility of 10 Mbps compatibility

The plug-and-play SuperStack II Dual Speed Hub 500 and PS Hubs provide flexible, troublefree, high-speed connectivity with a low cost of entry—all while preserving existing network equipment investments.



Key Benefits

Easy to use. The Dual Speed Hub 500 and the PS Hub 40/50 work straight out of the box without any configuration needed.

Powerful management.* Both hubs provide SNMP/RMON, graphical Web management, and are shipped with 3Com Transcend® Network Supervisor.

100% compatible. Seamless integration allows the stack to be treated as a single data and management entity.

Fault tolerance. Single points of failure can be backed up to minimize downtime. These include the power supply unit, downlinks to the backbone, and AC main supply.

+5 lifetime limited warranty. Complete peace of mind with lifetime limited warranty and 5 years of advanced hardware replacement.

Preferred brand. Experience and unrivalled market leadership from a company that can deliver the hubs that meet your workgroup needs. 3Com is the established market leader in 10 and 10/100 hubs.

If you're looking for a stackable hub that will grow with your business, then look no further than the award-winning SuperStack® II Dual Speed Hub 500 and the SuperStack II PS Hub family.

The Dual Speed Hub 500 is an autosensing 10/100 Mbps hub that complements PS Hub 10 Mbps Ethernet hubs. When you need a stackable solution that delivers 10/100 Fast Ethernet connectivity to your network, mix and match the PS Hub family with Dual Speed Hub 500s for a winning combination. The 10/100 Mbps autosensing capability on each port supports 10 Mbps, automatically detecting the speed of the attached PC network interface card (NIC). Designed for the smoothest and most cost-effective migration to Fast Ethernet, the SuperStack II Dual Speed Hub 500 works with existing 10 Mbps NICs, and when used with 10/100 Mbps NICs, automatically upgrades the

connection to 100 Mbps. Plus users can add SNMP/RMON management, when required. The Dual Speed Hub 500 stacks with SuperStack II PS Hub 40/50s, SuperStack II Hub 10s, and LinkBuilder® FMS II hubs, offering the most flexible solution available on the market.

For 10 Mbps-only workgroups, consider the SuperStack II PS Hub family comprising the SuperStack II PS Hub 40 and the SuperStack II PS Hub 50. Both the Dual Speed Hub 500 and PS Hubs offer full RMON support, Web-based management, SNMP management, security, and resilient links. By adding a Dual Speed Hub 500 to your PS Hubs, you can boost the performance of your workgroups by adding 10/100 Mbps users to your existing 10 Mbps network.

300714



10/100 Hubs

*Management is optional on Dual Speed Hub 500.

†Source: Dell®/Oro Vendor LANscope 8/98.

SuperStack II Hubs

Easy to Use

The SuperStack II Dual Speed Hub 500 and PS Hub family offer plug-and-play connectivity for the easiest-to-use, stackable hub system. The self-configuring hubs ensure reliable, troublefree installation from the moment your system is turned on.

Scalability

The SuperStack II Hub 10, PS Hub family, and Dual Speed Hub 500 all stack together, allowing for easy expansion of your network—so you can build and expand 10 Mbps stacks (PS Hubs) and expand to add 10/100 Mbps users (Dual Speed Hub 500) when the time is right.

Advanced RMON Management

Embedded RMON software and dedicated hardware provides support for at least seven RMON groups on all segments. RMON enterprise monitoring and analysis lets network managers work smarter—not harder—in managing their network devices networkwide. Transcend® network management's powerful combination of RMON and SmartAgent® software reduces the processing burden on the management station, minimizing network traffic and saving time by automatically monitoring and analyzing the network. RMON indicates at a glance how the network is performing and who is using it the most.

Web Management

Web-based management allows easy graphical configuration and direct access to management information from anywhere on the network with a few clicks of the Web browser.

LAN Security Architecture (LSA)

3Com's patented LSA comes standard with the hub's management to deliver advanced security features to protect your valuable network resources. For example, Need To Know (NTK) protects sensitive data on the network by preventing passive listening to sensitive information, and Disconnect Unauthorized Device (DUD) automatically detects and/or disables unauthorized devices and then notifies the network management station.

Outstanding Fault Tolerance

The Dual Speed Hub 500 and PS Hub family allow single points of failure to be backed up to minimize downtime.

Redundant management Management can continue uninterrupted even if one unit in the stack goes offline. The SuperStack II Dual Speed Hub 500 can accept multiple management modules for redundancy. This capability is standard with PS Hubs because each hub already has built-in management.

Redundant bridges If there are multiple Dual Speed Hub 500s or PS Hub 50s in a stack, the internal bridges will configure themselves to be redundant to each other.

Hot-swap cascade units Allows units to be added and removed from the middle of a stack without interruption, similar to adding or removing a card from a chassis.

Resilient links Provides backup connections for downlinks, protecting against cable breakage and unit failure. Resilient links switch so quickly that users are never aware.

Backup power systems The Advanced Redundant Power System protects against internal power supply unit failure, and the Uninterruptible Power System protects against AC main failure.

Transcend Network Management

All SuperStack II products include 3Com Transcend Network Supervisor, providing powerful, yet easy-to-use network management tuned to the needs of small-to-medium enterprises. Less experienced network managers will find the automated operations and intelligent defaults helpful, while more experienced users will enjoy using the advanced features. An intuitive user interface focuses on the tasks and information all managers need to take control of their network. A discovery wizard finds IP devices and links on the network up to a maximum of 500 devices. After discovery, the network structure is automatically mapped to provide a graphical display of devices and connections. Working from the map, the network manager can quickly monitor stress, set thresholds and alerts, view network events, generate reports, and launch device configuration tools. To provide fast notification of problems, Transcend Network Supervisor alerts announce network problems via audio/visual alarms or e-mail.

Transcend Network Supervisor provides:

Immediate notification of

problems—An alert system quickly notifies managers of problems.

Total visibility—A network activity log lists network events as they occur.

Knowledge of the network—A network map shows the devices and physical connections of the network and provides an instant color-coded view of the state of the network.

Real-time detailed monitoring

Good monitoring is a combination of examining available bandwidth, generated errors, service availability, and application response times. The Network Supervisor stress window provides an accurate indication of the current state of stress and a warning zone that helps predict when a device or link may be about to become overloaded.

Other products in the award-winning 3Com Transcend family, such as Transcend WorkGroup Manager and Transcend Enterprise Manager, can also manage the SuperStack II series.

Expansion Flexibility

The Dual Speed Hub 500 and PS Hubs provide expansion slots in every hub. These can be used for Fast Ethernet TX and FX downlinks in the Dual Speed Hub 500 and PS Hub 50, or adding a management module to the Dual Speed Hub 500, or even connecting to a different media such as 10BASE2. See the Specifications section for full details on the wide range of expansion modules available.

3Com +5 Lifetime Limited Warranty

The 3Com +5 lifetime limited warranty minimizes downtime and ensures that the network is back up fast. Should a hub fail during its first five years, 3Com will provide a replacement unit. You then return the faulty unit to 3Com for repair. After five years, 3Com's standard lifetime limited warranty applies.

300715

The Dual Speed Hub 500

Scalability is the hallmark of the SuperStack II Dual Speed Hub 500. You can make an initial low-cost investment and then add a number of accessories to enhance its capabilities that allow you to get the most from your 10/100 Mbps autosensing hub.

10/100 Autosensing on Every Port

Autosensing 10/100 Mbps per port offers full compatibility with Ethernet and Fast Ethernet devices. The ports automatically detect the speed of the attached device and direct the data to the appropriate repeater segment.

Smart Autosensing

Smart autosensing ensures that both speed and cable quality are automatically sensed to maximize performance. The Smart autosensing 10/100 Mbps

feature enabled by the management module enhances the standard autosensing feature by recognizing not only the cable speed (10 or 100 Mbps), but also the cable quality (incorrectly/correctly installed Category 3, 4, or 5 cable) and maximizes the throughput. Once enabled by the user, Smart autosensing allows you to forget about the cable category issues because the hub determines the optimal setting.

Distance Extender Modules

The optional 100BASE-TX and 100BASE-FX distance extender modules significantly expand the configuration capabilities of the SuperStack II Dual Speed Hub 500. These slide-in modules overcome the Fast Ethernet Class I and Class II repeater and cabling distance restrictions that handicap existing network configurations. They allow you to connect the hub to any Fast Ethernet

device or daisy-chain a virtually unlimited number of hubs over distances up to 100 meters over copper wire or up to 2 kilometers (in full-duplex mode) over fiber optic cable.

Modular Management

The optional slide-in module provides full SNMP support, as well as a number of advanced automated capabilities to make your life easier.

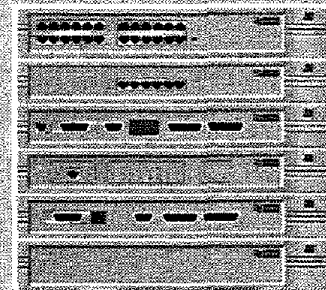
SuperStack® II Systems

The 3Com SuperStack® II system gives you a flexible, cost-effective connectivity solution for local, wide area, and SNA networks. You can combine diverse technologies and network services in one stacked system, strengthen it with uninterruptible and redundant power systems, and manage it all with Transcend® network management solutions.

As an important part of the 3Com Transcend networking framework, SuperStack II systems will meet your evolving network needs—future proofing your network investment.

A single SuperStack II system provides connections for a range of network environments and protocols: Ethernet, Fast Ethernet, Layer 3 switching, Gigabit Ethernet, Token Ring, FDDI, ISDN, X.25, Frame Relay, and ATM. Depending on your needs, you can build SuperStack II systems for virtually any network environment. Capabilities include:

- Hubs for flexible workgroup connectivity that feature SNMP, RMON, and Web-based management
- Industry-leading physical layer support for Token Ring networks, including Token Ring switching
- Full SNMP, RMON, and Web-based management for Ethernet, Fast Ethernet, Gigabit Ethernet, as well as a dedicated RMON-1/RMON-2 probe
- Full range of switches to increase performance in high-speed client/server LANs
- Full, multiprotocol network access for telecommuters or users at other off-site locations
- Routing between central site and branch offices using innovative Boundary Routing® architecture or conventional routing software for multiple WAN choices, including ISDN



Hubs
Switches
Routers
SDLC Converters
Access Servers
RMON-2 Probe
Open Partners
Power Systems



300716

- SNA-to-LAN conversion linking local and remote offices to an SNA host system
- Choice of power systems to ensure uninterrupted network operation

For smaller offices of fewer than 20 users, our OfficeConnect® products can be used to complement SuperStack II systems.

The SuperStack II PS Hub Family

Built-In Management

The SuperStack II PS Hub family provides increased bandwidth and management control built in at no extra cost using these standard features:

- Up to 40 segments
- Port switching through software
- All nine groups of RMON on all segments simultaneously

Transcend Network Supervisor is shipped with all SuperStack II hubs. With Transcend Network Supervisor, network devices are automatically discovered and network activity and stress monitored through an intuitive graphical interface to provide powerful, yet easy-to-use network management.

Segmentation

Microsegmentation ensures that users get optimal performance from the network. Users can stack up to 10 SuperStack II PS Hub units, providing up to 40 segments overall. The multi-channel cascade built into the SuperStack II PS Hub family supports our Ethernet segments and a separate management channel in a single cascade cable. The separate management channel allows full management of isolated and switched segments.

Port Switching

Users can be allocated and reallocated easily from one segment to another via software to suit operational needs. This

capability increases bandwidth by permitting completely flexible allocation of ports to any of four network segments per unit. It also makes it extremely easy to alter workgroups. Adds, moves, or changes to user groups are simply a matter of a few keystrokes from a management console.

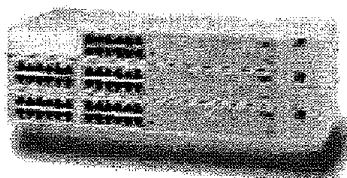
100 Mbps Downlink with PS Hub 50

The SuperStack II PS Hub 50 boosts desktop performance with its internal segment switch and Fast Ethernet expansion slot. Customers can increase bandwidth by segmenting their workgroups and then connecting them into a Fast Ethernet backbone or server.

100 Mbps downlink modules are available in 100BASE-TX and 100BASE-FX versions and can be configured to operate in half- or full-duplex mode. The maximum distance supported is 100 meters over copper wire or 2 kilometers over fiber optic cable (in full-duplex mode).

Load Balancing

With the SuperStack II PS Hub family, individual conversations between ports are continuously monitored using the RMON capability and are automatically redistributed to free up valuable network bandwidth. Balancing can be triggered by time or by exceeding a utilization threshold, making the process entirely automatic.



*SuperStack II PS Hub 40 TP 12 port
SuperStack II PS Hub 40 TP 24 port
SuperStack II PS Hub 50 TP 24 port*

300717

Specifications

SuperStack II Dual Speed Hub 500 and PS Hub Family

Dimensions and Weight

Dual Speed Hub 500

Height: 44 mm (1U or 1.7 in)

Width: 440 mm (17.3 in)

Depth: 310 mm (12.2 in)

Weight:

12-port—2.6 kg (5.6 lb)

24-port—2.7 kg (5.8 lb)

PS Hub 40

Height: 44 mm (1U or 1.7 in)

Width: 440 mm (17.3 in)

Depth: 168 mm (6.6 in)

Weight:

12-port—2 kg (4.4 lb)

24-port—2.1 kg (4.6 lb)

PS Hub 50

Height: 44 mm (1U or 1.7 in)

Width: 440 mm (17.3 in)

Depth: 168 mm (6.6 in)

Weight:

24-port—2.2 kg (4.8 lb)

Mounting

Includes hardware for mounting in a standard 19-inch rack.

Connections and Cables

12 or 24 RJ-45 ports supporting 10BASE-T transmission over two pairs of Category 3, 4, or 5 UTP cable, or 100BASE-TX transmission over two pairs of Category 5 UTP/STP cable

Power Requirement

Dual Speed Hub 500

Power Inlet: IEC 320

AC Line Frequency: 40 to 63 Hz

Input Voltage Options: 80 to 264 VAC RMS

Fuse Protection: 5 A

PS Hub 40/50

Power Inlet: IEC 320

AC Line Frequency: 50 to 60 Hz

Input Voltage Options: 85 to 264 VAC RMS

Fuse Protection: 2 A

Power consumption:

Dual Speed Hub 500

12-port: 38 W

24-port: 49 W

PS Hub 40

12-port: 26 W

24-port: 29 W

PS Hub 50

24-port: 35 W

Heat dissipation/hour:

Dual Speed Hub 500

12-port: 130 BTU

24-port: 167 BTU

PS Hub 40

12-port: 90 BTU

24-port: 103 BTU

PS Hub 50

24-port: 124 BTU

Indicators

Per Unit LEDs: Power status, management/attention

Per Segment LEDs: Collision/activity

Per Port LEDs: Partition, link status

Standards Compliance

IEEE 802.3 μ 100BASE-T compliant

IEEE 802.3 μ 10BASE-T compliant

Dual Speed Hub 500: 100 Mbps baseband CSMA/CD standard (complies with IEEE standard Class II repeater)*

*The Dual Speed Hub 500 achieves this only as a stand-alone product, not as part of a stack.

Functional

ISO/IEC 8802-3

IEEE 802.3 (Ethernet)

IEEE 802.3u (Fast Ethernet)

IEEE 802.1D (Bridging)

Safety

UL 1950

CSA-C22.2 No. 950

EN 60950

Electromagnetic Compatibility

Dual Speed Hub 500

EN 55022 Class A

FCC Part 15 Class A

VCCI Class 2

EN 50082-1

ICE-003 Class A;

As in 25 3548

PS Hub 40/50

FCC Part 15 Class A

EN 50082-1 (IEC 801 2-5)

VFG 243

EN 55022 Level B

CSA 108.8

EN 61000-3-2

Network Management Standards

Protocols

SNMP RFC 1157

ARP RFC 826

IP RFC 791

ICMP RFC 792

UDP RFC 768

TCP RFC 793

TFTP RFC 783

SLIP RFC 1055

MIBs

MIB II RFC 1213

MAU RFC 1515

RS 232 RFC 1659
(Dual Speed Hub 500 only)

RMON RFC 1757

RMON-2 RFC 2021
(Dual Speed Hub 500 only)

Repeater RFC 2108

Switch Performance

Dual Speed Hub 500

4 K maximum addresses

Learning rate: 50 addresses/second maximum

Aging period default: 5 days

Filtering: 163,680 frames/second

Forwarding:

10 Mbps \rightarrow 100 Mbps:
14,880 frames/second

100 Mbps \rightarrow 10 Mbps:
14,800 frames/second

Latency (store and forward only): \leq 40 μ S

PS Hub 50

512 maximum addresses

Forwarding:

10 Mbps \rightarrow 10 Mbps:
14,800 frames/second

10 Mbps \rightarrow 100 Mbps Downlink:
14,800 frames/second

100 Mbps Downlink \rightarrow 10 Mbps:
14,800 frames/second

Latency (store and forward only): 8 μ S

3Com +5 Lifetime Limited Warranty

If a hub (including power supply and fan) should fail during its first five years, return the faulty unit to 3Com for repair, and 3Com will send you a replacement unit. This procedure minimizes downtime and ensures that the network is back up fast. After five years, 3Com's standard lifetime limited warranty applies, giving you peace of mind for the rest of the hub's lifetime (excluding power supply and fan).

300718

Ordering Information

Hubs

Dual Speed Hub 500 12-port TP (RJ-45)	3C16610
Dual Speed Hub 500 24-port TP (RJ-45)	3C16611
PS Hub 40 12-port TP (RJ-45)	3C16405
PS Hub 40 24-port TP (RJ-45)	3C16406
PS Hub 40 12-port TP (RJ-45) 4 pack	3C16405-4PK
PS Hub 40 24-port TP (RJ-45) 4 pack	3C16406-4PK
PS Hub 50 24-port TP (RJ-45)	3C16450

Optional Equipment

Dual Speed Hub 500 Management Module	3C16685
---	---------

Cables and Connectors

Dual Speed Hub 500/PS Hub Stacking Kit (with 30 cm cable included)	3C16692
Dual Speed Hub 500/Hub 10 Stacking Kit (with 30 cm cable included)	3C16686
Dual Speed Hub 500 Cascade Cable (30 cm)	3C16695
Dual Speed Hub 500 Hot-Swap Unit	3C16690
PS Hub Cascade Cable (30 cm)	3C16420
PS Hub Cascade Cable (1 m)	3C16421
PS Hub Hot-Swap Unit	3C16430

Backbone Modules

TP Transceiver 10BASE-T (RJ-45)	3C12063
Fiber Optic 10BASE-FL (ST)	3C1206-5
Coaxial Transceiver 10BASE2 (BNC)	3C1206-6
Fiber Optic 10BASE-FB (ST)	3C12067

Dual Speed Hub 500 only

100BASE-FX Distance Extender (SC)	3C16684
100BASE-TX Distance Extender (RJ-45)	3C16683

PS Hub 40 only

AUI Transceiver (female AUI)	3C1206-0
------------------------------	----------

PS Hub 50 only

100BASE-FX Module (SC)	3C16681
100BASE-TX Module (RJ-45)	3C16680

Advanced Redundant Power System (ARPS)

SuperStack II ARPS Chassis	3C16071
SuperStack II ARPS Management Module	3C16080
<i>For Dual Speed Hub 500</i>	
SuperStack II ARPS Power Module Type 2	3C16074
SuperStack II ARPS Y-Cable Type 2	3C16078

For PS Hub 40 & 50

SuperStack II ARPS Power Module 60 W	3C16072
SuperStack II ARPS Y-Cable Type 1	3C16079

Uninterruptible Power System (UPS)

SuperStack II UPS (U.S.)	3C16010
SuperStack II UPS (Int'l)	3C16011
SuperStack II UPS (Japan)	3C16012

Network Management

Transcend Network Supervisor*
Shipped with SuperStack II hubs
or can be downloaded from the
Web at www.3com.com/tns
*Available Q3CY99.

300719

3Com Corporation

P.O. Box 58145
5400 Bayfront Plaza
Santa Clara, CA 95052-8145
Phone: 1 800 NET 3Com or 1 408 326 5000
Fax: 1 408 326 5001
World Wide Web: www.3com.com

To learn more about 3Com products and services, visit our World Wide Web site at www.3com.com. 3Com Corporation is publicly traded on Nasdaq under the symbol COMS.

Copyright © 1999 3Com Corporation. All rights reserved. 3Com, the 3Com logo, Boundary Routing, LinkBuilder, OfficeConnect, SmartAgent, SuperStack, and Transcend are registered trademarks of 3Com Corporation. More connected. is a trademark of 3Com Corporation. All other company and product names may be trademarks of their respective companies. All specifications are subject to change without notice.



I.D. Number: 023ALL Cisco 4500

- [More Information on Cisco 4500-M Modular Router](#)
-

Introduction

Cisco's 4000 router family is growing again, with a new platform (the Cisco 4500), two new ISDN Network Processor Modules (NPMs), along with new IOS software features. The new 4500 joins the modular 4000 family and the fixed-configuration 2500 and 3000 families to create the industry's broadest spectrum of access router platforms. When combined with Cisco's Internetwork Operating System (IOS) features, these platform families form the most flexible and diverse access router product line available. Now, more than ever before, Access Without Compromise means greater IOS functionality and features on an even more diverse platform family.

The Cisco 4500 is a new midrange platform with two key defining characteristics:

- A high-performance RISC processor, which makes it particularly well suited, along with the new NPMs and software features, to solving current and future wide-area network (WAN) problems.
- Compatibility with existing Cisco 4000 NPMs and with the Cisco IOS, thus providing protection to customers' existing investments in Cisco equipment and assuring the proven broad and deep protocol support of Cisco's software.

The Cisco 4500 will be deployed in several different applications in each of the four market sectors: Access, Core, Workgroup, and IBM networking. Its performance shines in processor-intensive WAN applications. It offers benefits for IP network providers, multiprotocol network users, and legacy network integration and migration.

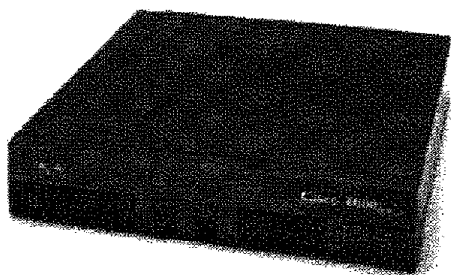
This announcement provides details regarding the Cisco 4500 and related new products and features. These include:

- Cisco 4500---Cisco's new midrange router platform that features the high performance of the 64-bit IDT Orion RISC processor (a MIPS R4400 derivative), compatibility with Cisco's existing NPMs, and the proven features of Cisco's IOS.
- ISDN BRI NPMs---Two new multiport ISDN BRI NPMs for internetworking over cost-effective Basic Rate Interfaces. A four-port version and an eight-port version are supported by new ISDN features in the IOS.

300720

- Protocol Translation---Long available on Cisco's communication servers, protocol translation is now available on the 4000 and 4500. Terminal sessions can be translated between Telnet, LAT, and X.25, allowing interaction in nonhomogenous environments.
- Data Compression---Payload compression for X.25 links reduces usage costs by compressing the payload of X.25 frames before they are sent out to the public network. Link compression increases volume over point to point links by compressing the entire data stream.
- ATM---Cisco is announcing its intention to deliver an ATM NPM for the Cisco 4500 platform. This commitment allows Cisco customers to plan ahead for simple upgrades when ATM services are generally available. The delivery of the ATM NPM will further protect their investments in the Cisco platforms.

Figure 1.:



Cisco 4500

Overview

Cisco 4500

Throughout the world, networks are growing at a tremendous rate. As network size, complexity, and bandwidth increase, so do the demands on the network infrastructure. Router configurations become more complex, new features and protocols add to system software size, and faster networks stress equipment. The processing power and operating memory that seemed plentiful a year ago might suddenly become inadequate for emerging networking requirements. Anticipating this evolution, Cisco has created the Cisco 4500, a new internetworking platform that will accommodate such growth.

The Cisco 4500's high performance comes from its 100-MHz, 64-bit IDT Orion RISC processor. It delivers impressive results in processor-intensive router operations. The fast clock speed and the RISC architecture enable the router to speed through tasks such as encapsulation, policy/security screening, and protocol conversion. This makes the Cisco 4500 an ideal platform for internetworks supporting SNA, for security and policy partitioning in campus internetworks, and for WAN internetwork gateways. It will also prove its worth in the ongoing internetwork migration as Cisco continues to develop new IOS features, higher-speed interfaces, and higher-density NPMs to make use of the available performance.

Along with the new processor, Cisco has made some significant memory enhancements. The 4500 comes standard with 8 MB of main DRAM, 4 MB of system Flash, 4 MB of Boot Flash, and 4 MB of shared DRAM.

Main memory stores the IOS running configuration and routing tables. With 8 MB as the standard

300721

configuration, the 4500 is ready to run IOS version 10.1. (For details of memory configurations see the table on page 10.) The Cisco 4500's main DRAM can be upgraded to 32 MB for large networks with large configurations or for future IOS versions with additional features.

Shared memory is used for packet buffering by all of the router's network interfaces. The 4-MB standard configuration is suitable for Cisco 4500s with up to 24 physical or virtual network interfaces. To increase throughput for greater numbers of interfaces (for example, configurations including Frame Relay interfaces with many DLCIs), the shared memory can be upgraded to 16 MB of DRAM.

System Flash stores the compressed system software image. The boot helper image, stored in EPROM in previous Cisco 4000 routers, is stored in the Boot Flash on the Cisco 4500. Upgrading the Boot image is greatly simplified with this configuration.

Even with the changes in processor and memory architecture, the Cisco 4500 retains compatibility with the Cisco IOS and with existing network interface modules. Delivery of the entire Cisco IOS feature set on this new platform at first release is key to users who want to deploy the Cisco 4500 into existing enterprise networks. Similarly, compatibility with existing NPMs is important to preserve the value of customers' investments in Cisco products. All recent revision NPMs, with the single exception of the NP-1E single-port Ethernet module, are compatible with both the Cisco 4000 and the Cisco 4500. (For details see the NPM compatibility requirements in the table on page 9.)

ISDN BRI NPMs and IOS ISDN Features

Two new NPMs provide the Cisco 4000 and Cisco 4500 platforms with ISDN Basic Rate Interface (BRI) support. One NPM has four separate physical ISDN BRIs; the other offers even greater density with eight separate BRIs. Since each physical BRI supports two 64-kbps ISDN B channels, the four- and eight-BRI NPMs provide 8 and 16 B channels, respectively.

The two new multiple BRI NPMs provide cost-effective remote office data gathering for organizations that want to take advantage of less costly ISDN tariffs. ISDN BRI services are especially cost effective for internetworking connections where the 64-kbps channels can be saturated and when access is required for only a portion of the working day. This is because tariffs are based upon the length of time that the call is established, not on the amount of data forwarded.

The Cisco IOS has an extensive set of features that make ISDN an even more effective internetworking technology. These features include dial backup and dial on demand for IP and other protocols. More information on Cisco's ISDN offering and the ISDN BRI NPMs is included in the ISDN Product Announcement that accompanies this announcement.

Protocol Translation

Protocol translation has been offered on Cisco's communication servers and on some router platforms for several years. Now the Cisco 4000 and Cisco 4500 also support this unique feature. Protocol translators convert between virtual terminal protocols to allow devices running dissimilar protocols to communicate. This feature provides improved applications availability through increased connectivity as well as cost savings by protecting investments in legacy terminal and/or computer networks. Standalone devices can provide this feature but at extra cost. By including this capability on the router, Cisco can further reduce our customers' network costs.

300722

Cisco's protocol translation software supports Telnet, TN3270, Local Area Transport (LAT), and X.25.

Descriptions of these protocols follow.

- **Telnet**---Telnet is the TCP/IP remote terminal protocol. TCP/IP is the most widely implemented protocol suite on networks of all media types. Cisco's protocol translation capabilities allow sessions between Telnet devices and X.25 or LAT devices.
- **TN3270**---TN3270 is the Telnet 3270 terminal emulator. TN3270 devices communicate with IBM hosts or front-end processors that support TCP/IP. The Cisco Protocol Translator can be used by X.25, Telnet, or LAT devices to emulate TN3270 devices for connection to IBM hosts.
- **Local Area Transport (LAT)**---LAT is Digital Equipment Corporation's proprietary terminal connection protocol used with Digital minicomputers. Cisco's routers support bridging of the LAT protocol. The addition of protocol translation allows LAT packets to be converted for communication with X.25 and Telnet devices.
- **X.25 PAD**---Cisco protocol translators support the X.25 protocol and X.3/X.28/X.29 specifications for virtual terminal support. This capability allows the conversion from X.25 to LAT and Telnet.

Both the 4000 and the 4500 are capable protocol translation platforms. Either unit can support up to 180 sessions. The 4500 will, of course, have significant processing power to spare for routing functions, even with a large number of protocol translation sessions running.

Data Compression

The demand for data to travel across the WAN is continuously increasing, driving the development of faster link services and more efficient transfer methods. The key elements that are driving the growth in need for additional WAN bandwidth are the many different applications that are being used in the networks and the growth in the size of the networks themselves. Of course, bandwidth does not come without a price, so optimizing use of the available bandwidth is critical.

Cisco's commitment to develop and market products that can provide a lower total cost of ownership is documented in the white paper published as Product Bulletin #231 earlier this year. This commitment has resulted in a broad spectrum of hardware platforms and a comprehensive set of IOS features to optimize usage of WAN links. These include features such as Compression, Priority Output Queuing, Custom Queuing, Access Lists, Novell Static SAPs, and Novell IPX SAP filters. WAN optimization involves processor-intensive functions that make the Cisco 4500 an excellent candidate for these applications.

Two new data compression features have been added to the IOS recently. Link compression and X.25 Packet Payload compression augment the existing TCP/IP header compression and DEC LAT compression features. Link compression, which compresses all of the data on a serial interface, was introduced in IOS 10.0(4). It provides complete data-stream compression on a point-to-point synchronous serial link.

Payload compression, which compresses only the data payload portion of the data packet while leaving the header intact, is the required method of compression for operation across virtual network WAN services such as X.25. Because the header information is left unchanged, the packet still can be switched through the WAN packet network. Cisco's X.25 payload compression feature is included in IOS version 10.2.

ATM

300723

Several years ago Cisco released a Statement of Direction with a three-phase plan for ATM implementation on our internetworking platforms. Since that time, Cisco has delivered each of the phases

as promised. Today, a native ATM interface is available on the Cisco 7000 series.

Now, Cisco is announcing that the Cisco 4500 will also support a native ATM interface. In mid-1995 Cisco will release and ship a new ATM NPM. It will be available with T1/E1, T3/E3, and SONET/SDH direct interfaces to ATM switches and services at rates up to 155 Mbps.

This commitment will allow our customers a long-term upgrade path for the Cisco 4500. For workgroup/campus networks, customers can operate with an FDDI backbone now and upgrade to ATM when the technology is more mature. This migration path requires only swapping the FDDI hub for an ATM switch and FDDI NPMs for ATM NPMs. Customers' investments in infrastructure cabling, router chassis, and LAN NPM cards are protected. For wide-area applications, customers will be able to replace current serial NPM interfaces with ATM NPMs when services are deployed to support them. Again, the value of the investment made in chassis and other NPMs will be maintained.

For early ATM technology adopters, Cisco has a product available today. The Cisco 7000 ATM Interface Processor (AIP) has been available since June. It provides the best-in-class performance and functionality expected from a high-end core Cisco product. AIP-equipped Cisco 7000s along with Cisco's HyperSwitch are creating the ATM router-cluster backbone networks.

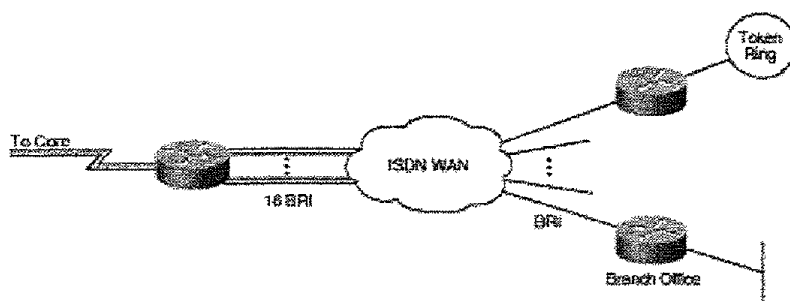
The Cisco 4500 ATM NPM will be targeted to the increasing number of users who will need only backbone connectivity. This access, possibly duplicated many times over from remote sites over evolving ATM public services, will demand a lower-cost solution. In these user environments, a low-cost ATM LAN/WAN configuration based on the Cisco 4500, such as one ATM interface with four Ethernets or one ATM with four Token Ring interfaces, will be the ideal solution.

4500 Applications in Cisco's Key Segments

The Cisco 4500 offers the same modularity as the Cisco 4000. This flexibility allows custom configurations that can apply to many applications in all four of Cisco's defined market segments: Access, Core, Workgroup, and IBM networks.

The Cisco 4000 remains the most cost-effective modular router in our product line. The Cisco 4500's improved performance is very well suited for applications that are more processor-intensive. In particular, and in combination with the new NPMs and software features, the Cisco 4500 will be used extensively in WAN applications for higher density, policy/security, and protocol conversion and translation. The examples that follow are some common applications in which the Cisco 4500 will be used.

Figure 2.:



ISDN Core/WAN Application

300724

Core/WAN

The Cisco 4500 will be used in many different Core/ WAN applications. Its size, modularity, and performance make it the router most appropriate for the distribution ring in large networks and even for the core or backbone in some smaller internetworks. This section contains descriptions of some Core/WAN applications that could use the extra power of the Cisco 4500.

In the first example, shown in Figure 2, the 4500 is used as a distribution ring router. High-speed interfaces connect to core routers, and 16 BRIs are available for access from remote sites. This configuration could accept 32 simultaneous B-channel calls. This type of data concentration function usually calls for security/policy filtering to control access. That processor-intensive function, along with the throughput possible due to the density allowed, make the 4500 the ideal choice for this type of application.

Similar arguments can be made for the 4500 when the WAN is an X.25 or Frame Relay network. By using the quad serial port NPMs, a multiport WAN router can be built. With high-speed interfaces upstream to the core, and medium-speed X.25 lines into the PDN, the Cisco 4500 could cost-effectively concentrate data from many remote routers. X.25 payload compression and protocol translation further improve the economics of this application. They also further tax the processing power of the router, making the Cisco 4500 an ideal platform for these applications. With Frame Relay interfaces, even higher data rates and more virtual circuits can be supported.

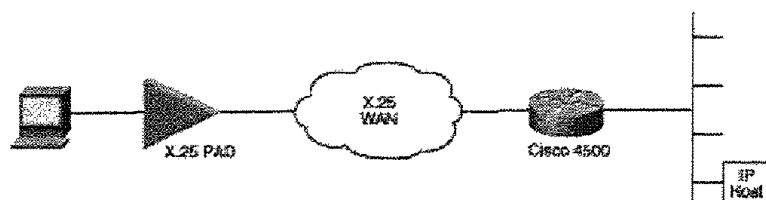
The next example, depicted in Figure 3, shows a common protocol translation application. Similar to the preceding case, the Cisco 4500 is used to concentrate data from multiple sites, this time from over an X.25 PDN. In this case, however, the router is performing an additional function. Remote users are making calls to the router through X.25 Packet Assembler/Disassemblers (PADs). The router accepts the calls, translates the terminal sessions from X.25 to Telnet, and forwards the new data on through the IP network. When the IP host responds, the router translates Telnet back to X.25 for delivery back to the terminal over the PDN.

The reverse application is also useful. That is the case where Cisco routers form an IP WAN and the Cisco Protocol Translation feature is used to connect to X.25 hosts.

Providing these functions on our Cisco 4000 and 4500 router platforms can save our customers from purchasing extra dedicated devices and services for translation. The protocol translator allows network administrators to deliver services to diverse users on legacy networks simply and cost effectively.

The final Core/WAN application discussed here involves the use of Cisco's Generic Route Encapsulation (GRE). GRE is used, among other reasons, to provide multiprotocol connectivity across a single protocol backbone. GRE is a processor-intensive function and is therefore a prime candidate for application on the Cisco 4500. IP service providers can use this feature to offer their customers multiprotocol service as well as to provide virtual private networks. Enterprise internetwork users could use this feature to tunnel low usage protocols over a common backbone.

Figure 3.:



300725

Protocol Translation Application

IBM

The Cisco 4500 is particularly well suited to SNA applications. The RISC processor provides the high performance required to effectively handle large SNA networks. Encapsulation, local acknowledgments, protocol conversion, and custom queuing are all key parts of an SNA/router solution, and all require significant processing power.

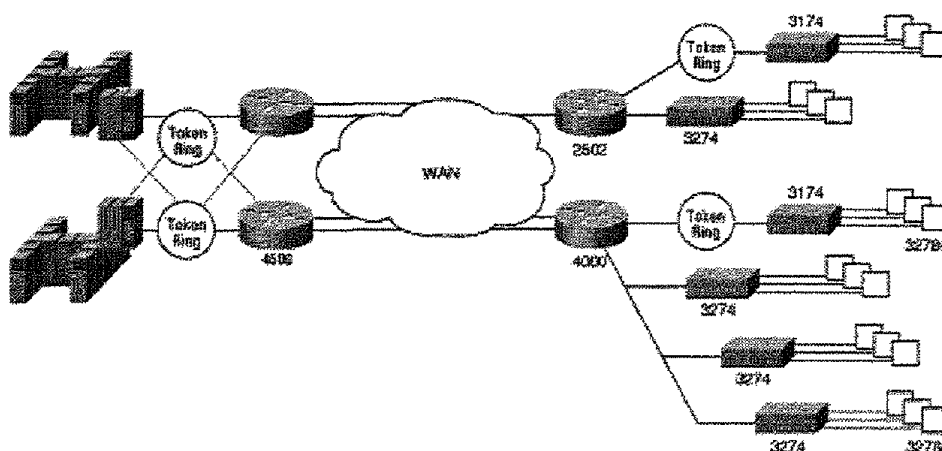
Figure 4 shows some typical SNA network applications. The two computer-room Cisco 4500s provide connectivity to the central site hosts. The interface is either via Token Ring or over serial SDLC lines. The Cisco 4500's modular capability allows configurations with a high density of serial lines and several Token Ring network interfaces. At the central site this can be used to dual-home the routers and provide extra WAN paths for higher availability.

The routers shown at the remote sites provide connection to the local cluster controllers and terminals. Again, connection can be via Token Ring or serial lines. Depending on the local environment and usage requirements, the remote sites could be serviced by Cisco 2500, Cisco 4000, or Cisco 4500 routers.

Cisco's IOS supports SDLC transport, SDLLC, and RSRB on the Cisco 4500. SDLC transport is used when both the cluster controllers and the front-end processors are connected to the internetwork over serial SDLC lines. If the host site has migrated to Token Ring LAN connections, the SDLC-to-LLC2 conversion (SDLLC) is used. Finally, if both ends of the WAN internetwork are Token Ring LANs, RSRB is used.

In all three cases the SNA data is encapsulated and then transported over the multiprotocol internetwork. Encapsulation is a processor-intensive function and thus is ideally suited for the Cisco 4500. All three scenarios also provide some form of local acknowledgment to maintain the state of the connection to the device without using valuable WAN bandwidth. This spoofing function is also processor intensive.

Figure 4.:



SNA Internetworking Application

Access

300726

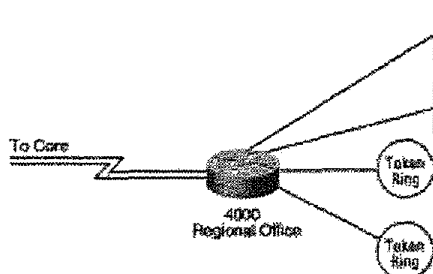
The modular architecture and variety of NPMs available for the Cisco 4000 and the Cisco 4500 provide customers with the flexibility to configure access routers for multi-LAN sites where fixed configuration

routers do not meet their needs. As the lowest-cost modular router in the Cisco product line, the Cisco 4000 is ideally suited for access applications. Figure 5 shows a simple multi-LAN branch office. The router must support Ethernet for one group of users and Token Ring networks for IBM users. Two upstream synchronous lines provide connectivity to the backbone network.

The Cisco 4500, with the same great flexibility and even greater performance, can function as a regional site access router, especially where some data concentration from branch offices is required. Figure 6 shows an example of this configuration. The Cisco 4500 provides access to the core network for the local LAN users, just as the Cisco 4000 did in the previous example. In this case, however, it must also support the data gathering function for the branch office sites that are connected via a WAN.

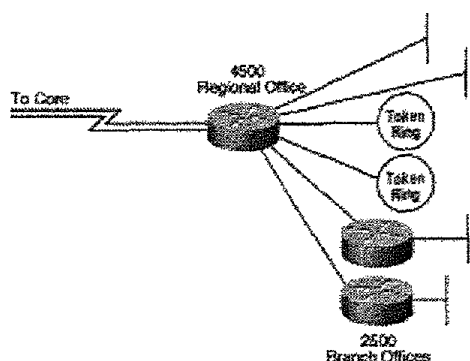
In this application, the extra performance of the Cisco 4500 enables the higher throughput required when forwarding data from multiple sites. In the case where the WAN is an X.25 network, more use can be made of the Cisco 4500's RISC processor bandwidth. The new Payload Compression feature can further reduce the cost of data concentration by compressing the X.25 packet contents while leaving the header to ensure transport across the packet-switched WAN. The smaller packets result in lower costs or recovered bandwidth for more applications.

Figure 5.:



Cisco 4000 Access Application

Figure 6.:



4500 Access Application

Workgroup/Campus

300727

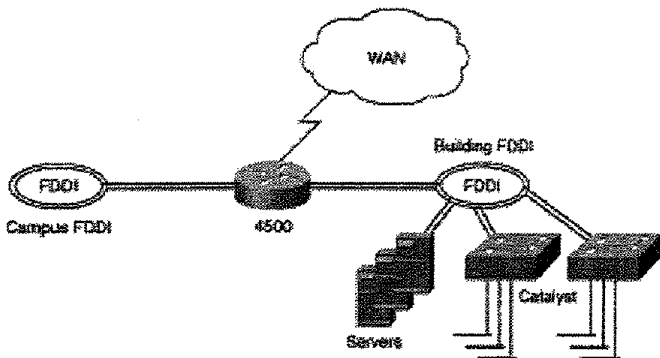
All of the specific applications for the Cisco 4500 described in the previous sections involve WAN environments; however, there are applications in workgroup and campus environments as well.

In Figure 7, two FDDI NPMs and one serial NPM are used on a single Cisco 4500 to provide policy/security filtering between a campus FDDI backbone, a departmental FDDI server network, and a

WAN internetwork.

The Cisco 4500 can deliver the performance required for FDDI internetworking and for the extra load demanded of the administrative policy/security functions.

Figure 7.:



Campus Application

Cisco 4500 Configuration Guidelines

Memory Requirements

The Cisco 4500 is a three-slot chassis very similar to the Cisco 4000. Both routers can hold up to three of the various NPMs. Following is a brief description of each NPM, the number of ports available, and the types of media each supports.

- **Ethernet**---Two versions are available: a single port and a dual port for a maximum density of six Ethernet per chassis. Both units provide both an AUI and a 10BaseT connector for each port. Note that the Cisco 4500 does not support the 1E NPM. The 1E is the oldest of the NPMs and will not pass EMI tests with the new, higher-speed Cisco 4500. Given the position of the Cisco 4500 with respect to the Cisco 4000, we expect that most will be used in higher-density applications. The 1E will continue to be sold and supported in the Cisco 4000 chassis.
- **Token Ring**---NPMs are available with one or two Token Ring ports for a maximum of six Token Ring interfaces. On both single- and dual-port NPMs, DB-9 ports provide a direct connection to a media access unit (MAU).
- **FDDI**---Each NPM supports one FDDI network interface. Versions are available for either dual- or single-attached multimode or dual-attached single-mode fiber. The Cisco 4500 supports up to two FDDI NPMs; the Cisco 4000 supports one.
- **Serial**---NPMs are available with two or four serial ports for a maximum of 12 synchronous serial interfaces. Universal interfaces are provided where the cable attached to each port determines the interface type and mode.

300728

- **BRI**---NPMs are available with four or eight basic rate interface ports. Each port is an RJ45.

The following table shows the combinations of NPMs that are supported by both chassis types.

NPM Configuration Limits

NPM Type	Number of NPMs		Earliest version supported on 4500
	4000	4500	
Single Ethernet	1, 2, or 3	Not supported	Not supported
Dual Ethernet	1, 2, or 3	1, 2, or 3	TBD
Single Token Ring (NP-1R)	1, 2, or 3	1, 2, or 3	---
Single Token Ring (NP-1RV2)	1, 2, or 3	1, 2, or 3	Rev. 4
Dual Token Ring	1, 2, or 3	1, 2, or 3	Rev. 4
Multimode, dual-attached FDDI	1	1 or 2	Rev. 5
Multimode, single-attached FDDI	1	1 or 2	Rev. 5
Single-mode, dual-attached FDDI	1	1 or 2	Rev. 5
Dual-port serial	1, 2, or 3	1, 2, or 3	---
Four-port serial	1, 2, or 3	1, 2, or 3	---
Four-port MBRI	1, 2, or 3	1, 2, or 3	---
Eight-port MBRI	1, 2, or 3	1, 2, or 3	---

The standard memory configuration for the Cisco 4500 includes 8 MB of main DRAM, 4 MB of System Flash, 4 MB of Boot Flash, and 4 MB of shared DRAM. Main memory can be upgraded to 32 MB for large networks with large configurations or for future IOS revisions with additional features. System Flash memory can be upgraded to 8 MB for additional room for stored images. Shared memory can be upgraded to 16 MB for applications where more than 24 physical or virtual interfaces are configured. The Cisco 4500 also uses Flash memory to store the Boot image. This change allows simplified Boot image upgrades.

The table below lists the standard and optional memory configurations for the Cisco 4500. Configurations for the older Cisco 4000 and the Cisco 4000-M are included for comparison. It also shows the minimum memory requirements for the Cisco 4500 and Cisco 4000 in order to support several IOS releases. See the table footnotes for recommended configurations for specific applications.

Memory Requirements and Options

	Boot	System Flash	Main DRAM ¹	Shared DRAM ²
Memory Options Supported				
&&Center&&				
&&Center&&				
&&Center&&				
Cisco 4000	1, 2 EPROM	2, 4	4, 16	1, 4
Cisco 4000-M	1, 2 EPROM	4, 8	4, 8, 16, 32	4, 16

300729

Cisco 4500		4, 8 Flash	4, 8	8, 32	4, 16
Minimum Memory Requirements by Image					
&&Center&&					
&&Center&&					
&&Center&&					
Cisco 4000	EPROM				
	&&Center&&				
	&&Center&&				
	&&Center&&				
	IOS 9.14(6)	1	2	4	1 ³
	IOS 9.21	2	4	16	4
	IOS 10.0	2	4	16	4
Cisco 4000-M	EPROM				
	&&Center&&				
	&&Center&&				
	&&Center&&				
	IOS 9.14(6)	1	4	4	4
	IOS 9.21	2	4	8	4
	IOS 10.0	2	4	8	4
Cisco 4500	Flash				
	&&Center&&				
	&&Center&&				
	&&Center&&				
	IOS 10.1	4	4	8	4

¹Use more memory for large configurations. This is independent of network size and protocol.

²Shared Memory: 4 MB is sufficient for applications with up to 24 physical or virtual interfaces. For greater than 24 physical or -virtual interfaces use more shared DRAM.

³On the original Cisco 4000, the standard configuration was 1 MB, which was sufficient for applications with up to 5 virtual -interfaces. For networks with 6 or more physical or virtual interfaces, use 4 MB shared DRAM.

300730

Due to the evolution of memory devices and speed requirement differences between the Cisco 4500 and the Cisco 4000-M, the components used to provide the memory in each chassis are different. The table

below shows the part numbers and descriptions for the various memory components.

Memory Component Part Numbers

Part Number	Platform	Description
MEM-NP4F=	4000	Additional 2 MB of Flash EPROM (total 4 MB)
MEM-NP16M=	4000	Additional 12 MB of Main Memory (total 16 MB)
MEM-NP4S=	4000	Additional 3 MB of Shared Memory (total 4 MB)
MEM-NP8F-M (=)	4000-M	Additional 4 MB of Flash EPROM (total 8 MB)
MEM-NP8M-M (=)	4000-M	8 MB Upgrade, replaces 4 MB Main Memory (total 8 MB)
MEM-NP16M-M (=)	4000-M	16 MB Upgrade, replaces 4 MB Main Memory (total 16 MB)
MEM-NP32M-M (=)	4000-M	32 MB Upgrade, replaces 4 MB Main Memory (total 32 MB)
MEM-NP8F-P (=)	4500	Additional 4 MB of Flash EPROM (total 8 MB)
MEM-NP32M-P (=)	4500	32 MB Upgrade, replaces 8 MB Main Memory (total 32 MB)
MEM-NP16S-P (=)	4500	16 MB Upgrade, replaces 4 MB Shared Memory (total 16 MB)

Cisco 4500, Features, Pricing, and Availability

Availability information for the Cisco 4500, the new NPMs, and the related software features is shown in the table below. Pricing information is included in the Ordering Information Addendum.

Product and Feature Availability

Feature/Module/Chassis	IOS Release	Orderable	FCS
4500 Chassis	10.1	08/08/94	08/22/94
4 MBRI NPM	10.2	08/08/94	10/01/94
8 MBRI NPM	10.2	08/08/94	10/01/94
Protocol Translation (4000)	10.0(4)	now	now
Protocol Translation (4500)	10.2	08/08/94	10/01/94
X.25 Packet Compression	10.2	08/08/94	10/01/94

Home	What's New	How to Buy	Login	Register	Feedback	Search	Map/Help
----------------------	----------------------------	----------------------------	-----------------------	--------------------------	--------------------------	------------------------	--------------------------

Posted: Thu Mar 4 22:24:45 PST 1999

All contents copyright © 1992--1999 Cisco Systems, Inc. [Important Notices](#) and [Privacy Statement](#).

300731



I.D. Number: 023ALL Cisco 4500

-
- [More Information on Cisco 4500-M Modular Router](#)
-

Introduction

Cisco's 4000 router family is growing again, with a new platform (the Cisco 4500), two new ISDN Network Processor Modules (NPMs), along with new IOS software features. The new 4500 joins the modular 4000 family and the fixed-configuration 2500 and 3000 families to create the industry's broadest spectrum of access router platforms. When combined with Cisco's Internetwork Operating System (IOS) features, these platform families form the most flexible and diverse access router product line available. Now, more than ever before, Access Without Compromise means greater IOS functionality and features on an even more diverse platform family.

The Cisco 4500 is a new midrange platform with two key defining characteristics:

- A high-performance RISC processor, which makes it particularly well suited, along with the new NPMs and software features, to solving current and future wide-area network (WAN) problems.
- Compatibility with existing Cisco 4000 NPMs and with the Cisco IOS, thus providing protection to customers' existing investments in Cisco equipment and assuring the proven broad and deep protocol support of Cisco's software.

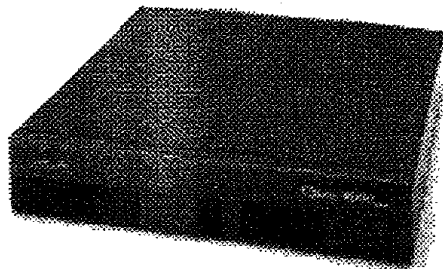
The Cisco 4500 will be deployed in several different applications in each of the four market sectors: Access, Core, Workgroup, and IBM networking. Its performance shines in processor-intensive WAN applications. It offers benefits for IP network providers, multiprotocol network users, and legacy network integration and migration.

This announcement provides details regarding the Cisco 4500 and related new products and features. These include:

- Cisco 4500—Cisco's new midrange router platform that features the high performance of the 64-bit IDT Orion RISC processor (a MIPS R4400 derivative), compatibility with Cisco's existing NPMs, and the proven features of Cisco's IOS.
- ISDN BRI NPMs—Two new multiport ISDN BRI NPMs for internetworking over cost-effective Basic Rate Interfaces. A four-port version and an eight-port version are supported by new ISDN features in the IOS.

300732

- **Protocol Translation**---Long available on Cisco's communication servers, protocol translation is now available on the 4000 and 4500. Terminal sessions can be translated between Telnet, LAT, and X.25, allowing interaction in nonhomogenous environments.
- **Data Compression**---Payload compression for X.25 links reduces usage costs by compressing the payload of X.25 frames before they are sent out to the public network. Link compression increases volume over point to point links by compressing the entire data stream.
- **ATM**---Cisco is announcing its intention to deliver an ATM NPM for the Cisco 4500 platform. This commitment allows Cisco customers to plan ahead for simple upgrades when ATM services are generally available. The delivery of the ATM NPM will further protect their investments in the Cisco platforms.

Figure 1.:**Cisco 4500**

Overview

Cisco 4500

Throughout the world, networks are growing at a tremendous rate. As network size, complexity, and bandwidth increase, so do the demands on the network infrastructure. Router configurations become more complex, new features and protocols add to system software size, and faster networks stress equipment. The processing power and operating memory that seemed plentiful a year ago might suddenly become inadequate for emerging networking requirements. Anticipating this evolution, Cisco has created the Cisco 4500, a new internetworking platform that will accommodate such growth.

The Cisco 4500's high performance comes from its 100-MHz, 64-bit IDT Orion RISC processor. It delivers impressive results in processor-intensive router operations. The fast clock speed and the RISC architecture enable the router to speed through tasks such as encapsulation, policy/security screening, and protocol conversion. This makes the Cisco 4500 an ideal platform for internetworks supporting SNA, for security and policy partitioning in campus internetworks, and for WAN internetwork gateways. It will also prove its worth in the ongoing internetwork migration as Cisco continues to develop new IOS features, higher-speed interfaces, and higher-density NPMs to make use of the available performance.

Along with the new processor, Cisco has made some significant memory enhancements. The 4500 comes standard with 8 MB of main DRAM, 4 MB of system Flash, 4 MB of Boot Flash, and 4 MB of shared DRAM.

300733

Main memory stores the IOS running configuration and routing tables. With 8 MB as the standard configuration, the 4500 is ready to run IOS version 10.1. (For details of memory configurations see the table on page 10.) The Cisco 4500's main DRAM can be upgraded to 32 MB for large networks with large configurations or for future IOS versions with additional features.

Shared memory is used for packet buffering by all of the router's network interfaces. The 4-MB standard configuration is suitable for Cisco 4500s with up to 24 physical or virtual network interfaces. To increase throughput for greater numbers of interfaces (for example, configurations including Frame Relay interfaces with many DLCIs), the shared memory can be upgraded to 16 MB of DRAM.

System Flash stores the compressed system software image. The boot helper image, stored in EPROM in previous Cisco 4000 routers, is stored in the Boot Flash on the Cisco 4500. Upgrading the Boot image is greatly simplified with this configuration.

Even with the changes in processor and memory architecture, the Cisco 4500 retains compatibility with the Cisco IOS and with existing network interface modules. Delivery of the entire Cisco IOS feature set on this new platform at first release is key to users who want to deploy the Cisco 4500 into existing enterprise networks. Similarly, compatibility with existing NPMs is important to preserve the value of customers' investments in Cisco products. All recent revision NPMs, with the single exception of the NP-1E single-port Ethernet module, are compatible with both the Cisco 4000 and the Cisco 4500. (For details see the NPM compatibility requirements in the table on page 9.)

ISDN BRI NPMs and IOS ISDN Features

Two new NPMs provide the Cisco 4000 and Cisco 4500 platforms with ISDN Basic Rate Interface (BRI) support. One NPM has four separate physical ISDN BRIs; the other offers even greater density with eight separate BRIs. Since each physical BRI supports two 64-kbps ISDN B channels, the four- and eight-BRI NPMs provide 8 and 16 B channels, respectively.

The two new multiple BRI NPMs provide cost-effective remote office data gathering for organizations that want to take advantage of less costly ISDN tariffs. ISDN BRI services are especially cost effective for internetworking connections where the 64-kbps channels can be saturated and when access is required for only a portion of the working day. This is because tariffs are based upon the length of time that the call is established, not on the amount of data forwarded.

The Cisco IOS has an extensive set of features that make ISDN an even more effective internetworking technology. These features include dial backup and dial on demand for IP and other protocols. More information on Cisco's ISDN offering and the ISDN BRI NPMs is included in the ISDN Product Announcement that accompanies this announcement.

Protocol Translation

300734

Protocol translation has been offered on Cisco's communication servers and on some router platforms for several years. Now the Cisco 4000 and Cisco 4500 also support this unique feature. Protocol translators convert between virtual terminal protocols to allow devices running dissimilar protocols to communicate. This feature provides improved applications availability through increased connectivity as well as cost savings by protecting investments in legacy terminal and/or computer networks. Standalone devices can provide this feature but at extra cost. By including this capability on the router, Cisco can further reduce

our customers' network costs.

Cisco's protocol translation software supports Telnet, TN3270, Local Area Transport (LAT), and X.25. Descriptions of these protocols follow.

- **Telnet**—Telnet is the TCP/IP remote terminal protocol. TCP/IP is the most widely implemented protocol suite on networks of all media types. Cisco's protocol translation capabilities allow sessions between Telnet devices and X.25 or LAT devices.
- **TN3270**—TN3270 is the Telnet 3270 terminal emulator. TN3270 devices communicate with IBM hosts or front-end processors that support TCP/IP. The Cisco Protocol Translator can be used by X.25, Telnet, or LAT devices to emulate TN3270 devices for connection to IBM hosts.
- **Local Area Transport (LAT)**—LAT is Digital Equipment Corporation's proprietary terminal connection protocol used with Digital minicomputers. Cisco's routers support bridging of the LAT protocol. The addition of protocol translation allows LAT packets to be converted for communication with X.25 and Telnet devices.
- **X.25 PAD**—Cisco protocol translators support the X.25 protocol and X.3/X.28/X.29 specifications for virtual terminal support. This capability allows the conversion from X.25 to LAT and Telnet.

Both the 4000 and the 4500 are capable protocol translation platforms. Either unit can support up to 180 sessions. The 4500 will, of course, have significant processing power to spare for routing functions, even with a large number of protocol translation sessions running.

Data Compression

The demand for data to travel across the WAN is continuously increasing, driving the development of faster link services and more efficient transfer methods. The key elements that are driving the growth in need for additional WAN bandwidth are the many different applications that are being used in the networks and the growth in the size of the networks themselves. Of course, bandwidth does not come without a price, so optimizing use of the available bandwidth is critical.

Cisco's commitment to develop and market products that can provide a lower total cost of ownership is documented in the white paper published as Product Bulletin #231 earlier this year. This commitment has resulted in a broad spectrum of hardware platforms and a comprehensive set of IOS features to optimize usage of WAN links. These include features such as Compression, Priority Output Queuing, Custom Queuing, Access Lists, Novell Static SAPs, and Novell IPX SAP filters. WAN optimization involves processor-intensive functions that make the Cisco 4500 an excellent candidate for these applications.

Two new data compression features have been added to the IOS recently. Link compression and X.25 Packet Payload compression augment the existing TCP/IP header compression and DEC LAT compression features. Link compression, which compresses all of the data on a serial interface, was introduced in IOS 10.0(4). It provides complete data-stream compression on a point-to-point synchronous serial link. Payload compression, which compresses only the data payload portion of the data packet while leaving the header intact, is the required method of compression for operation across virtual network WAN services such as X.25. Because the header information is left unchanged, the packet still can be switched through the WAN packet network. Cisco's X.25 payload compression feature

is included in IOS version 10.2.

ATM

Several years ago Cisco released a Statement of Direction with a three-phase plan for ATM implementation on our internetworking platforms. Since that time, Cisco has delivered each of the phases as promised. Today, a native ATM interface is available on the Cisco 7000 series.

Now, Cisco is announcing that the Cisco 4500 will also support a native ATM interface. In mid-1995 Cisco will release and ship a new ATM NPM. It will be available with T1/E1, T3/E3, and SONET/SDH direct interfaces to ATM switches and services at rates up to 155 Mbps.

This commitment will allow our customers a long-term upgrade path for the Cisco 4500. For workgroup/campus networks, customers can operate with an FDDI backbone now and upgrade to ATM when the technology is more mature. This migration path requires only swapping the FDDI hub for an ATM switch and FDDI NPMs for ATM NPMs. Customers' investments in infrastructure cabling, router chassis, and LAN NPM cards are protected. For wide-area applications, customers will be able to replace current serial NPM interfaces with ATM NPMs when services are deployed to support them. Again, the value of the investment made in chassis and other NPMs will be maintained.

For early ATM technology adopters, Cisco has a product available today. The Cisco 7000 ATM Interface Processor (AIP) has been available since June. It provides the best-in-class performance and functionality expected from a high-end core Cisco product. AIP-equipped Cisco 7000s along with Cisco's HyperSwitch are creating the ATM router-cluster backbone networks.

The Cisco 4500 ATM NPM will be targeted to the increasing number of users who will need only backbone connectivity. This access, possibly duplicated many times over from remote sites over evolving ATM public services, will demand a lower-cost solution. In these user environments, a low-cost ATM LAN/WAN configuration based on the Cisco 4500, such as one ATM interface with four Ethernets or one ATM with four Token Ring interfaces, will be the ideal solution.

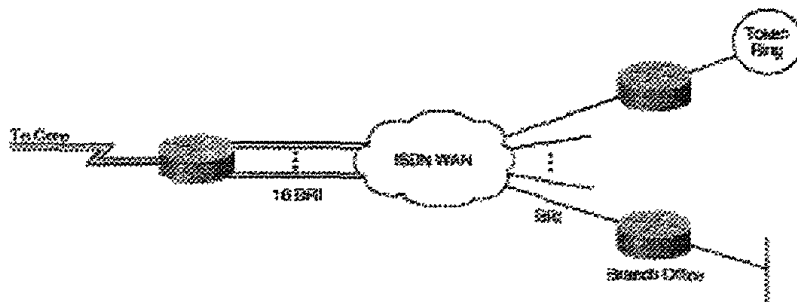
4500 Applications in Cisco's Key Segments

The Cisco 4500 offers the same modularity as the Cisco 4000. This flexibility allows custom configurations that can apply to many applications in all four of Cisco's defined market segments: Access, Core, Workgroup, and IBM networks.

The Cisco 4000 remains the most cost-effective modular router in our product line. The Cisco 4500's improved performance is very well suited for applications that are more processor-intensive. In particular, and in combination with the new NPMs and software features, the Cisco 4500 will be used extensively in WAN applications for higher density, policy/security, and protocol conversion and translation. The examples that follow are some common applications in which the Cisco 4500 will be used.

300736

Figure 2.:



ISDN Core/WAN Application

Core/WAN

The Cisco 4500 will be used in many different Core/ WAN applications. Its size, modularity, and performance make it the router most appropriate for the distribution ring in large networks and even for the core or backbone in some smaller internetworks. This section contains descriptions of some Core/WAN applications that could use the extra power of the Cisco 4500.

In the first example, shown in Figure 2, the 4500 is used as a distribution ring router. High-speed interfaces connect to core routers, and 16 BRIs are available for access from remote sites. This configuration could accept 32 simultaneous B-channel calls. This type of data concentration function usually calls for security/policy filtering to control access. That processor-intensive function, along with the throughput possible due to the density allowed, make the 4500 the ideal choice for this type of application.

Similar arguments can be made for the 4500 when the WAN is an X.25 or Frame Relay network. By using the quad serial port NPMs, a multiport WAN router can be built. With high-speed interfaces upstream to the core, and medium-speed X.25 lines into the PDN, the Cisco 4500 could cost-effectively concentrate data from many remote routers. X.25 payload compression and protocol translation further improve the economics of this application. They also further tax the processing power of the router, making the Cisco 4500 an ideal platform for these applications. With Frame Relay interfaces, even higher data rates and more virtual circuits can be supported.

The next example, depicted in Figure 3, shows a common protocol translation application. Similar to the preceding case, the Cisco 4500 is used to concentrate data from multiple sites, this time from over an X.25 PDN. In this case, however, the router is performing an additional function. Remote users are making calls to the router through X.25 Packet Assembler/Disassemblers (PADs). The router accepts the calls, translates the terminal sessions from X.25 to Telnet, and forwards the new data on through the IP network. When the IP host responds, the router translates Telnet back to X.25 for delivery back to the terminal over the PDN.

The reverse application is also useful. That is the case where Cisco routers form an IP WAN and the Cisco Protocol Translation feature is used to connect to X.25 hosts.

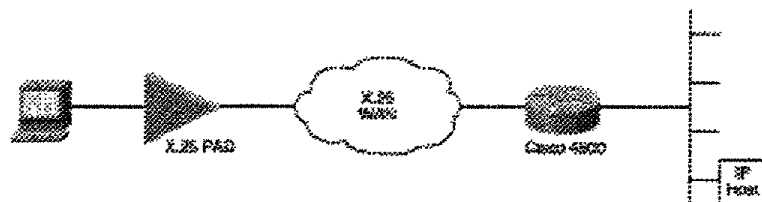
300737

Providing these functions on our Cisco 4000 and 4500 router platforms can save our customers from purchasing extra dedicated devices and services for translation. The protocol translator allows network administrators to deliver services to diverse users on legacy networks simply and cost effectively.

The final Core/WAN application discussed here involves the use of Cisco's Generic Route Encapsulation (GRE). GRE is used, among other reasons, to provide multiprotocol connectivity across a single protocol

backbone. GRE is a processor-intensive function and is therefore a prime candidate for application on the Cisco 4500. IP service providers can use this feature to offer their customers multiprotocol service as well as to provide virtual private networks. Enterprise internetwork users could use this feature to tunnel low usage protocols over a common backbone.

Figure 3.:



Protocol Translation Application

IBM

The Cisco 4500 is particularly well suited to SNA applications. The RISC processor provides the high performance required to effectively handle large SNA networks. Encapsulation, local acknowledgments, protocol conversion, and custom queuing are all key parts of an SNA/router solution, and all require significant processing power.

Figure 4 shows some typical SNA network applications. The two computer-room Cisco 4500s provide connectivity to the central site hosts. The interface is either via Token Ring or over serial SDLC lines. The Cisco 4500's modular capability allows configurations with a high density of serial lines and several Token Ring network interfaces. At the central site this can be used to dual-home the routers and provide extra WAN paths for higher availability.

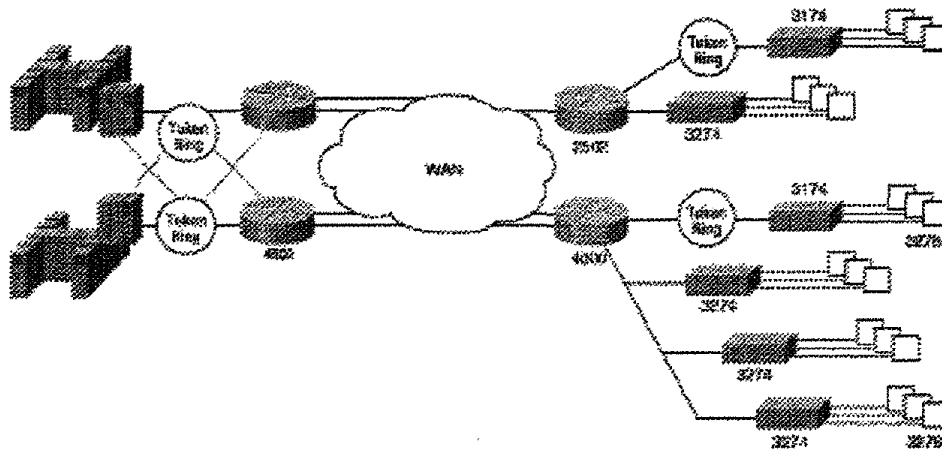
The routers shown at the remote sites provide connection to the local cluster controllers and terminals. Again, connection can be via Token Ring or serial lines. Depending on the local environment and usage requirements, the remote sites could be serviced by Cisco 2500, Cisco 4000, or Cisco 4500 routers.

Cisco's IOS supports SDLC transport, SDLLC, and RSRB on the Cisco 4500. SDLC transport is used when both the cluster controllers and the front-end processors are connected to the internetwork over serial SDLC lines. If the host site has migrated to Token Ring LAN connections, the SDLC-to-LLC2 conversion (SDLLC) is used. Finally, if both ends of the WAN internetwork are Token Ring LANs, RSRB is used.

In all three cases the SNA data is encapsulated and then transported over the multiprotocol internetwork. Encapsulation is a processor-intensive function and thus is ideally suited for the Cisco 4500. All three scenarios also provide some form of local acknowledgment to maintain the state of the connection to the device without using valuable WAN bandwidth. This spoofing function is also processor intensive.

Figure 4.:

300738



SNA Internetworking Application

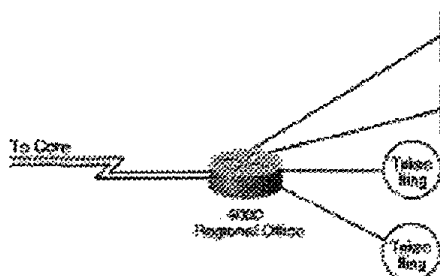
Access

The modular architecture and variety of NPMs available for the Cisco 4000 and the Cisco 4500 provide customers with the flexibility to configure access routers for multi-LAN sites where fixed configuration routers do not meet their needs. As the lowest-cost modular router in the Cisco product line, the Cisco 4000 is ideally suited for access applications. Figure 5 shows a simple multi-LAN branch office. The router must support Ethernet for one group of users and Token Ring networks for IBM users. Two upstream synchronous lines provide connectivity to the backbone network.

The Cisco 4500, with the same great flexibility and even greater performance, can function as a regional site access router, especially where some data concentration from branch offices is required. Figure 6 shows an example of this configuration. The Cisco 4500 provides access to the core network for the local LAN users, just as the Cisco 4000 did in the previous example. In this case, however, it must also support the data gathering function for the branch office sites that are connected via a WAN.

In this application, the extra performance of the Cisco 4500 enables the higher throughput required when forwarding data from multiple sites. In the case where the WAN is an X.25 network, more use can be made of the Cisco 4500's RISC processor bandwidth. The new Payload Compression feature can further reduce the cost of data concentration by compressing the X.25 packet contents while leaving the header to ensure transport across the packet-switched WAN. The smaller packets result in lower costs or recovered bandwidth for more applications.

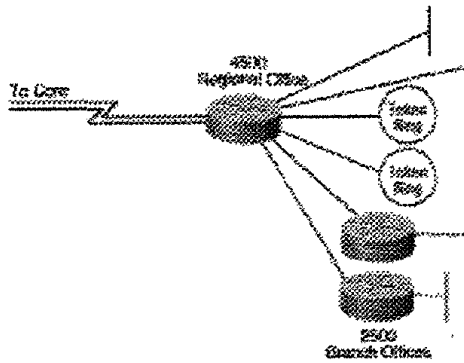
Figure 5.:



Cisco 4000 Access Application

Figure 6.:

300739



4500 Access Application

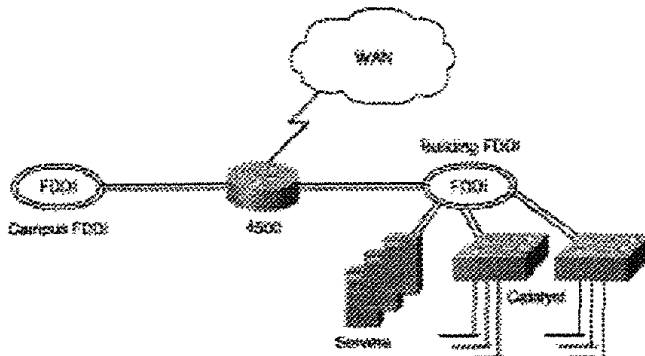
Workgroup/Campus

All of the specific applications for the Cisco 4500 described in the previous sections involve WAN environments; however, there are applications in workgroup and campus environments as well.

In Figure 7, two FDDI NPMs and one serial NPM are used on a single Cisco 4500 to provide policy/security filtering between a campus FDDI backbone, a departmental FDDI server network, and a WAN internetwork.

The Cisco 4500 can deliver the performance required for FDDI internetworking and for the extra load demanded of the administrative policy/security functions.

Figure 7.:



Campus Application

Cisco 4500 Configuration Guidelines

Memory Requirements

The Cisco 4500 is a three-slot chassis very similar to the Cisco 4000. Both routers can hold up to three of the various NPMs. Following is a brief description of each NPM, the number of ports available, and the types of media each supports.

300740

- Ethernet—Two versions are available: a single port and a dual port for a maximum density of six Ethernet per chassis. Both units provide both an AUI and a 10BaseT connector for each port. Note that the Cisco 4500 does not support the 1E NPM. The 1E is the oldest of the NPMs and

will not pass EMI tests with the new, higher-speed Cisco 4500. Given the position of the Cisco 4500 with respect to the Cisco 4000, we expect that most will be used in higher-density applications. The 1E will continue to be sold and supported in the Cisco 4000 chassis.

- **Token Ring**—NPMs are available with one or two Token Ring ports for a maximum of six Token Ring interfaces. On both single- and dual-port NPMs, DB-9 ports provide a direct connection to a media access unit (MAU).
- **FDDI**—Each NPM supports one FDDI network interface. Versions are available for either dual- or single-attached multimode or dual-attached single-mode fiber. The Cisco 4500 supports up to two FDDI NPMs; the Cisco 4000 supports one.
- **Serial**—NPMs are available with two or four serial ports for a maximum of 12 synchronous serial interfaces. Universal interfaces are provided where the cable attached to each port determines the interface type and mode.
- **BRI**—NPMs are available with four or eight basic rate interface ports. Each port is an RJ45.

The following table shows the combinations of NPMs that are supported by both chassis types.

NPM Configuration Limits

NPM Type	Number of NPMs		Earliest version supported on 4500
	4000	4500	
Single Ethernet	1, 2, or 3	Not supported	Not supported
Dual Ethernet	1, 2, or 3	1, 2, or 3	TBD
Single Token Ring (NP-1R)	1, 2, or 3	1, 2, or 3	—
Single Token Ring (NP-1RV2)	1, 2, or 3	1, 2, or 3	Rev. 4
Dual Token Ring	1, 2, or 3	1, 2, or 3	Rev. 4
Multimode, dual-attached FDDI	1	1 or 2	Rev. 5
Multimode, single-attached FDDI	1	1 or 2	Rev. 5
Single-mode, dual-attached FDDI	1	1 or 2	Rev. 5
Dual-port serial	1, 2, or 3	1, 2, or 3	—
Four-port serial	1, 2, or 3	1, 2, or 3	—
Four-port MBRI	1, 2, or 3	1, 2, or 3	—
Eight-port MBRI	1, 2, or 3	1, 2, or 3	—

300741

The standard memory configuration for the Cisco 4500 includes 8 MB of main DRAM, 4 MB of System Flash, 4 MB of Boot Flash, and 4 MB of shared DRAM. Main memory can be upgraded to 32 MB for large networks with large configurations or for future IOS revisions with additional features. System Flash memory can be upgraded to 8 MB for additional room for stored images. Shared memory can be upgraded to 16 MB for applications where more than 24 physical or virtual interfaces are configured. The Cisco 4500 also uses Flash memory to store the Boot image. This change allows

simplifiedBoot image upgrades.

The table below lists the standard and optional memory configurations for the Cisco 4500. Configurations for the older Cisco 4000 and the Cisco 4000-M are included for comparison. It also shows the minimum memory requirements for the Cisco 4500 and Cisco 4000 in order to support several IOS releases. See the table footnotes for recommended configurations for specific applications.

Memory Requirements and Options

	Boot	System Flash	Main DRAM ¹	Shared DRAM ²	
Memory Options Supported					
&&Center&&					
&&Center&&					
&&Center&&					
	Cisco 4000	1, 2 EPROM	2, 4	4, 16	1, 4
	Cisco 4000-M	1, 2 EPROM	4, 8	4, 8, 16, 32	4, 16
	Cisco 4500	4, 8 Flash	4, 8	8, 32	4, 16
Minimum Memory Requirements by Image					
&&Center&&					
&&Center&&					
&&Center&&					
Cisco 4000	EPROM				
	&&Center&&				
	&&Center&&				
	&&Center&&				
	IOS 9.14(6)	1	2	4	1 ³
	IOS 9.21	2	4	16	4
	IOS 10.0	2	4	16	4
Cisco 4000-M	EPROM				
	&&Center&&				
	&&Center&&				
	&&Center&&				
	IOS 9.14(6)	1	4	4	4

300742

Cisco 4500	IOS 9.21	2	4	8	4
	IOS 10.0	2	4	8	4
	Flash				
	&&Center&&				
	&&Center&&				
	&&Center&&				
	IOS 10.1	4	4	8	4

¹Use more memory for large configurations. This is independent of network size and protocol.

²Shared Memory: 4 MB is sufficient for applications with up to 24 physical or virtual interfaces. For greater than 24 physical or -virtual interfaces use more shared DRAM.

³On the original Cisco 4000, the standard configuration was 1 MB, which was sufficient for applications with up to 5 virtual -interfaces. For networks with 6 or more physical or virtual interfaces, use 4 MB shared DRAM.

Due to the evolution of memory devices and speed requirement differences between the Cisco 4500 and the Cisco 4000-M, the components used to provide the memory in each chassis are different. The table below shows the part numbers and descriptions for the various memory components.

Memory Component Part Numbers

Part Number	Platform	Description
MEM-NP4F=	4000	Additional 2 MB of Flash EPROM (total 4 MB)
MEM-NP16M=	4000	Additional 12 MB of Main Memory (total 16 MB)
MEM-NP4S=	4000	Additional 3 MB of Shared Memory (total 4 MB)
MEM-NP8F-M (=)	4000-M	Additional 4 MB of Flash EPROM (total 8 MB)
MEM-NP8M-M (=)	4000-M	8 MB Upgrade, replaces 4 MB Main Memory (total 8 MB)
MEM-NP16M-M (=)	4000-M	16 MB Upgrade, replaces 4 MB Main Memory (total 16 MB)
MEM-NP32M-M (=)	4000-M	32 MB Upgrade, replaces 4 MB Main Memory (total 32 MB)
MEM-NP8F-P (=)	4500	Additional 4 MB of Flash EPROM (total 8 MB)
MEM-NP32M-P (=)	4500	32 MB Upgrade, replaces 8 MB Main Memory (total 32 MB)
MEM-NP16S-P (=)	4500	16 MB Upgrade, replaces 4 MB Shared Memory (total 16 MB)

Cisco 4500, Features, Pricing, and Availability

300743

Availability information for the Cisco 4500, the new NPMs, and the related software features is shown in the table below. Pricing information is included in the Ordering Information Addendum.

Product and Feature Availability

Feature/Module/Chassis	IOS Release	Orderable	FCS
4500 Chassis	10.1	08/08/94	08/22/94
4 MBRI NPM	10.2	08/08/94	10/01/94
8 MBRI NPM	10.2	08/08/94	10/01/94
Protocol Translation (4000)	10.0(4)	now	now
Protocol Translation (4500)	10.2	08/08/94	10/01/94
X.25 Packet Compression	10.2	08/08/94	10/01/94

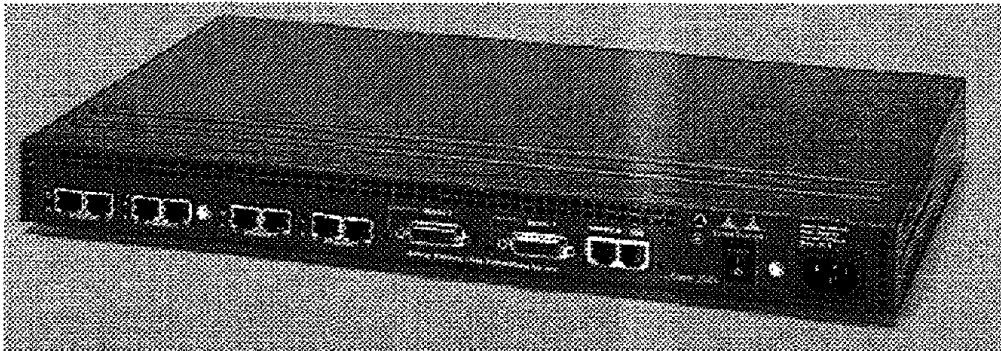
Home	What's New	How to Buy	Login	Register	Feedback	Search	Map/Help
----------------------	----------------------------	----------------------------	-----------------------	--------------------------	--------------------------	------------------------	--------------------------

Posted: Thu Mar 4 22:24:45 PST 1999

All contents copyright © 1992--1999 Cisco Systems, Inc. [Important Notices](#) and [Privacy Statement](#)

300744

[Solutions](#) [Products](#) [Ordering](#) [Support](#) [Partners](#) [Training](#) [Corporate](#)
[Overview](#)



Cisco 2505 and 2507 Router/Hubs

Cisco 2505 Router/Hub

- [Products Catalog: Cisco 2505/2507 Router/Hubs](#)
- [Cisco Simplifies Remote Access with Integrated Router/Hub Units](#)

Introduction

Cisco Systems is introducing two new **Cisco 2500** models that combine in a single unit the proven functionality and reliability of the Cisco 2500 router with a fully integrated managed workgroup wiring hub. Targeted at small branch office environments, the new Cisco 2505 and 2507 models integrate the basic local-area network (LAN) connectivity and routing requirements of typical branch offices. The Cisco 2500 router offers flexible LAN and wide-area network (WAN) feature support. The integrated hub provides built-in LAN connectivity for simplified, cost-effective installation. Cisco's total solution also provides integrated configuration and management tools. Large companies can extend their internetworks to sites with no previous connectivity, and smaller businesses can now install and centrally manage complete LAN/WAN internetworks.

Features at a Glance

- Two fixed-configuration Ethernet hardware models: models 2505 and 2507 Eight or sixteen repeated hub ports
- Three **Internetwork Operating System**[tm] (IOS) feature sets
- Hub ports and router interfaces configurable via Telnet commands, AutoInstall, or Cisco Configuration Builder
- **SNMP**-managed hub ports

300745

- Integrated router/hub SNMP agent
- Supported by CiscoWorks[tm] management applications
- Two synchronous serial interfaces operating at up to 4 megabits per second (Mbps)
- One asynchronous serial interface for low-speed WAN access for primary dial-on-demand routing or dial backup connections

Benefits Summary

- Flexible LAN connectivity, with support for 8 or 16 Ethernet hub ports.
- Integrated hub ports providing:
 - Simplified installation and improved serviceability and reliability with fewer cables and devices
 - Space savings through one compact platform
 - Simplified, integrated router and hub configuration through Cisco's Configuration Builder
 - Centralized, simplified, and integrated router and hub management through Cisco's CiscoWorks management applications
- Flexible WAN connectivity, with one asynchronous and two synchronous serial interfaces for link redundancy, line speed migration, and WAN cost optimization
- Flexible IOS[tm] feature sets, from the industry's lowest-cost, full-featured IP routing to the full suite of protocols and features found in Cisco's IOS Enterprise feature set
- Proven reliability of the industry-leading Cisco 2500 router platform
- Single-vendor supply and support through Cisco's direct and indirect field sales and support organization and partnerships

Packet-Switched and Circuit-Switched Services

Both the Cisco 2505 and 2507 models come standard with Frame Relay, X.25, X.25 DDN, and SMDS software, providing cost-effective access to packet-switched networks at remote sites. All models also come standard with V.25bis and Integrated Services Digital Network (ISDN) signaling software for cost-effective access to circuit-switched networks.

SDLC Consolidation

When ordered with the IOS Enterprise feature set (see the **"Product Information"** section that follows), the Cisco 2505 and 2507 routers can be configured to connect a local SDLC device and a LAN to a corporate internetwork using either synchronous serial port. This configuration allows an organization to maintain its SDLC investments while gaining performance improvements and greater management control.

Protocol Translation

Also available with the IOS Enterprise feature set, Cisco's protocol translation feature provides improved applications availability through increased connectivity, as well as cost savings by protecting investments in legacy terminal networks. This feature extends the life of those terminal-to-host environments while allowing migration to LAN-based applications. Cisco's protocol translation software supports Telnet, Local Area Transport (LAT), X.25 PAD, TN3270, and rlogin.

Data Compression

Cisco announced a **comprehensive support strategy for data compression** earlier this year. In addition to TCP/IP header and DEC LAT compression, all Cisco 2505 and 2507 models currently support link compression for up to 128 kilobits per second (kbps) with LAPB encapsulation and Frame Relay header compression. In IOS Release 10.2, X.25 payload compression will be supported. These compression techniques ensure a wide range of support for optimizing wide-area internetworking costs.

Product Information

The integrated router/hub models are available in two fixed hardware configurations:

MODEL	INTERFACE CONFIGURATION
CISCO2505	One Ethernet interface with eight repeated hub ports, one slow-speed asynchronous serial, and two synchronous serial interfaces.
CISCO2507	One Ethernet interface with sixteen repeated hub ports, one slow-speed asynchronous serial, and two synchronous serial interfaces.

300747

Both hardware models come with 8 or 16 RJ-45 connectors on the back of the unit. The Ethernet interface is internal to the chassis, with the 8 or 16 connectors representing repeated hub ports. A separate Ethernet AUI connector is not included. These models are targeted at small access environments with basic LAN connectivity requirements. By integrating the wiring hub repeater, there is no need for

external router-to-hub cables, separate hub installation, or additional physical space for two units.

Each of the two hardware models can be ordered with any of three IOS feature sets. They range from a low cost, IP-specific feature set (IP), to a Desktop (DT) feature set containing IP, IPX, AppleTalk, and DECnet, to an Enterprise (EN) feature set containing Cisco's full IOS protocol suite. Each set includes Cisco's unique AutoInstall capability, the "plug-and-play" router feature that allows for rapid, economical router installation with minimal expertise at remote sites. The specific protocols and features supported in each feature set are summarized in the following table.

		+-----+ IOS FEATURE SET +-----+		
CATEGORY	PROTOCOL/FEATURE	IP	DT	EN
LAN	IP, Bridging, LAN extension host	*	*	*
	IPX, AppleTalk 1 & 2, DECnet IV		*	*
	DECnet V, OSI, XNS, Banyan VINES, Apollo			*
	Domain			
WAN	Dual Synchronous Serial, Compression	*	*	*
	HDLC, PPP, X.25, Frame Relay, SMDS#, ISDN	*	*	*
IP Routing	RIP, IGRP, OSPF, BGP, EGP	*	*	*
	ES-IS, IS-IS			*
IBM	RSRB, Proxy Explorer, SNA Local LU	*	*	*
	Address Prioritization, Local			
	Acknowledgment, Administrative			
	Filtering, NetBIOS Name Caching, Access			
	Control Filtering			
	Serial Tunneling or SDLC Transport, SDLC			*
	Link-Level Support, SDLLC			
Management	AutoInstall, SNMP, Integrated Hub	*	*	*
	Management, MIBs			
Protocol Translation	Telnet, LAT, rlogin, TN3270, X.25 PAD			*

SMDS is only in the EN feature set as of Release 10.0. SMDS will be in all three feature sets as of 10.2(2).

Each model comes standard with 4 megabytes (MB) of Flash EPROM memory and either 2, 4, or 6 MB of DRAM memory, depending on which IOS feature set is ordered. Flash memory can be expanded in two ways. One option provides a "dual-banking" capability for uninterrupted router availability during IOS upgrades. The second option provides an additional 4 MB of Flash memory for expanded code space for future IOS releases. DRAM memory, which provides for a combination of shared packet memory and system memory, can be increased to a maximum of 18 MB total. This combination of standard and optional memory provides users with cost-effective, expandable memory configurations, ensuring that the Cisco 2505 and 2507 models can support any access environment, both today and into the future. The memory configurations are summarized in the following tables.

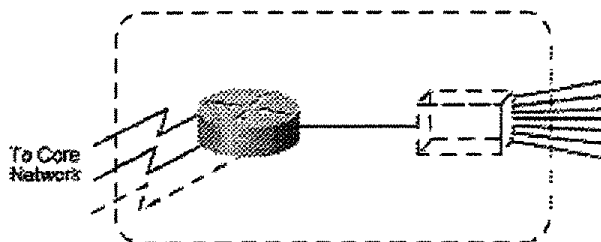
Flash Memory

300748

	IOS RELEASE 10.0 (all)	IOS RELEASE 10.2 (IP & Desktop feature sets)	IOS RELEASE 10.2 (Enterprise feature set)
Single-bank capability	One 4-MB SIMM (standard)	Two 4-MB SIMMs (optional)	

management information and functionality for both router and hub components. Instead of managing the router and the hub separately, CiscoWorks' CiscoView application covers both with the same user interface and workstation or PC. CiscoView includes the following tools:

- **Port Configuration** -- Enables simplified configuration of the hub's ports.
- **Physical View** -- Graphically depicts the router and hub physical configuration, including interface and port descriptions.
- **Show Status** -- Depicts the status of interfaces and ports for easy identification of problems at a glance. Data provided includes whether the ports are operationally up/down and administratively up/down.
- **Troubleshooting** -- Allows for simplified troubleshooting of routine problems, including resetting a port or interface and gathering traffic statistics.
- **Cisco Configuration Builder** -- In addition to being able to configure the routing features in the Cisco 2505 and 2507, Cisco Configuration Builder provides a simplified means of configuring the integrated hub ports. Configuration Builder automatically "learns" the model and hardware configuration and provides a hub port configuration window. This allows the user to configure both the router and hub with the same easy to use graphical user interface (GUI) application and PC.



With CiscoWorks and the new Cisco 2505 and 2507 integrated hub models, users gain a cost-effective, easy-to-install, centrally managed LAN/WAN solution.

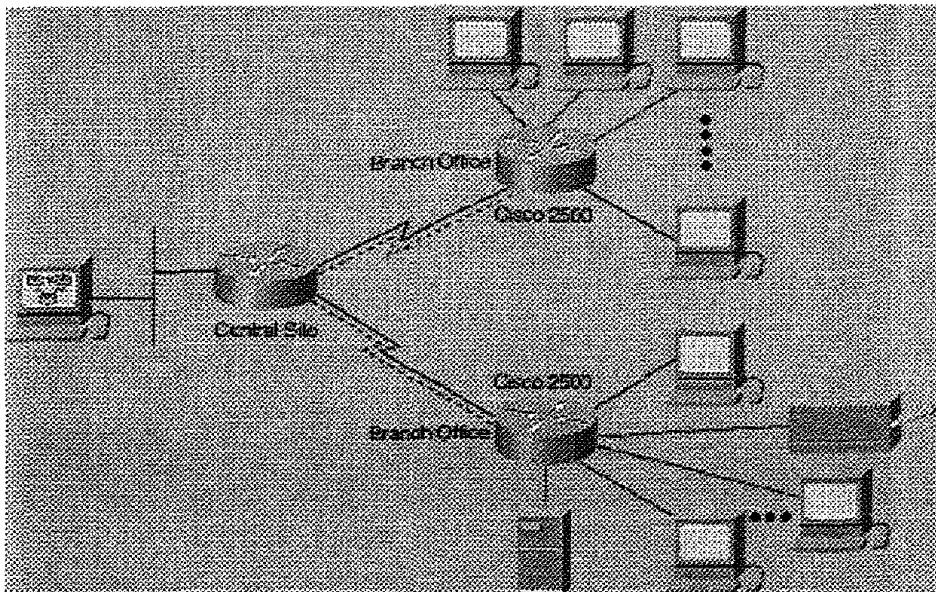
Dial-on-Demand Routing (DDR)

Dial-on-demand routing facilitates using WAN links only when necessary. For remote locations that only require occasional access to network services, the Cisco 2505 and 2507 models' dial-on-demand feature reduces the cost of wide-area access by making use of ISDN or serial dial-up lines as alternatives to costly leased lines. Cisco's IOS currently supports DDR for IP, IPX, and AppleTalk protocols.

Dial Backup

300749

The dial backup feature provides a more economical solution than a second leased line when users require a backup link for disaster recovery. If access over the primary WAN link fails, the second dial-up line is automatically brought on line. This feature also allows for a second line to be activated to load-share traffic if the primary link experiences a user-selected threshold.



The new Cisco 2505 and 2507 models integrate a fully managed wiring hub into the industry-leading Cisco 2500 series router.

Applications

Integrated Hub Functionality

The Cisco 2505 and 2507 models offer an ideal combination of connectivity and management for small remote access or branch office environments.

- **LAN Wiring Concentration** -- These models use low-cost, unshielded twisted pair (UTP) cable wired in a star configuration for easy installation. If needed, changes and additions can be made easily by using a modular patch cord. Because the hub is integrated into the Cisco 2500 chassis, there is no need for separate power cords or hub-to-router cabling; everything is neatly contained in one compact desktop-, rack-, or wall-mountable chassis.
- **WAN Connectivity** -- As with all Cisco 2500 models, the Cisco 2505 and 2507 models come with one asynchronous and two synchronous serial interfaces allowing for easy connection to the WAN. The Cisco 2500 family offers flexible WAN access and migration from lower-cost asynchronous technologies to higher speed synchronous connections.
- **Network Management** -- The Cisco 2505 and 2507 models allow for complete in-band network management from any SNMP-based network management station. This feature allows the Cisco 2505 and 2507 models to be remotely managed from a central site, eliminating the need for network management expertise at the remote location. The Cisco 2505 and 2507 models comply with the applicable standards in RFC 1515 (Definition of Managed Objects for IEEE 802.3 Medium Attachment Units) and RFC 1516 (Definition of Managed Objects for IEEE 802.3 Repeater Devices). In addition to standard SNMP management capability, Cisco offers the following other installation and management capabilities:

300750

- **CiscoWorks Integrated Router/Hub Management** -- This feature provides detailed

Dual-bank capability Two 4-MB SIMMs (optional) Two 8-MB SIMMs (optional)

DRAM Memory

IOS FEATURE SET	TOTAL DRAM	
	Standard	Options
Enterprise	6 MB	18 MB
Desktop	4 MB	6 MB, 18 MB
IP	2 MB	4 MB, 6 MB, 18 MB

Cisco 2505 and 2507 Connectivity

Ethernet

The Cisco 2505 and 2507 models provide 8 or 16 10BaseT RJ-45 unshielded connectors compatible with the Ethernet Version 2 and IEEE 802.3 interface protocols.

Synchronous Serial

The Cisco 2505 and 2507 serial ports provide up to two dedicated serial port interfaces operating in DCE or DTE mode compatible with leased line, circuit-switched, and packet-switched services at speeds up to 4 Mbps. The serial port connectors use flexible serial transition cables, a universal design common to the **Cisco 7000** FSIP interface card, the **Cisco 4000** 4T network processor module (NPM), and other models within the Cisco 2500 family. This feature enables easy transition to any of the common physical interfaces, including V.35, EIA/TIA-232, EIA/TIA-449, EIA/TIA-530, and X.21, as well as common spares across Cisco's entire product line.

Asynchronous Serial (Auxiliary Port)

In addition to the two dedicated synchronous serial lines, the Cisco 2505 and 2507 model's auxiliary interfaces are configurable to provide an additional dial-up line for asynchronous routing. Asynchronous routing of IP, IPX, and AppleTalk protocols at speeds up to 38.4 kbps is supported over these interfaces.

SDLC

When ordered with the IOS Enterprise feature set, the Cisco 2505 and 2507 synchronous ports can be configured to connect SDLC devices to a corporate internetwork. Cisco STUN and SDLLC features provide SDLC control of the serial link. The serial ports support NRZ/NRZI and full- or half-duplex functionality.

Product Compliance

The Cisco 2505 and 2507 router/hubs meet or exceed the following product safety requirements:

- UL 1950
- CSA 22.2 through 950
- EN 60950
- EN 41003

300751

- BABT
- AUSTEL (AS3260, AST00)

In addition, the router/hubs meet or exceed the following specifications for electromagnetic compatibility (EMC) and are certified to meet the European EMC Directive:

- FCC Class A
- VDE 0878 Part 3 and 30, Class B
- CISPR 22 Class B
- VCCI Class 2 (Japan)
- NFC 98020 (France)
- CE Mark (Europe)
- IEC 801-2, 3, 4, 5, 6

Complete telecom network certification information, including country-by-country status, is available online on CCO for **registered users only** under "Product Approval Status by Country." Please review this data for the most recent updates regarding country availability, including certification/ registration numbers. If there are any questions regarding product approvals, please send them to pm-approvals@cisco.com.

Planned Orderability and Availability

The Cisco 2505 and 2507 models will be available for shipment at IOS release 10.0(6) on October 28, 1994. Availability on a country-by-country basis will depend on compliance testing status, and can be found online as described above. All memory options will be available with the initial shipments. Orders for all products will be accepted beginning September 12, 1994.

Posted: Wed Dec 3 09:05:21 PST 1997

Copyright 1996 © Cisco Systems Inc.

300752

Raptor Firewall

Announcing
Version 6.0
Click Here!

*For Windows NT,
Solaris, and HP-UX*

**Complete Protection For Securing Your
Network Perimeter**

Easy Setup and Scalable Management

Integrated Virtual Private Network (VPN)

Comprehensive Logging and Reporting

**A Comprehensive Architecture for Security
Policy Management**

Features and Benefits

Platforms and Specifications

Product Options

"We Chose AXENT's Raptor Firewall, based on their experience, their reliability, NT capability, and the high rating given them by independent industry groups."

— Sergio Cortez, Litton Industries

 Home  Highlights  About AXENT  Products  Support & Services  Investor Relations  News & Events  Partners
Contact AXENT

Copyright 1998 AXENT Technologies, Inc. All Rights Reserved

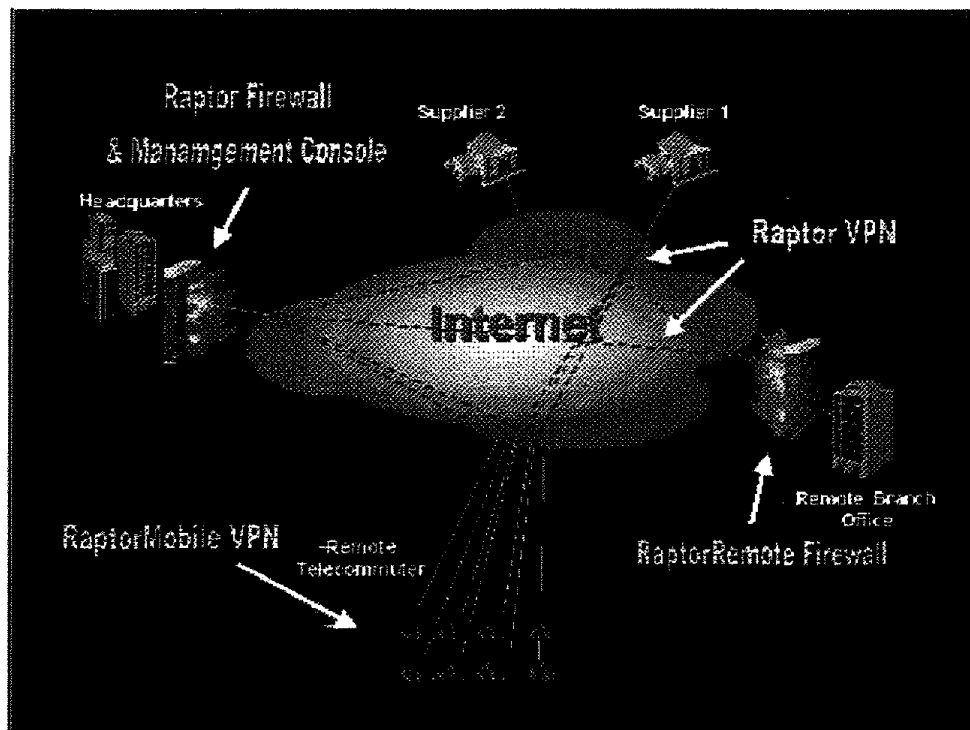
Complete Protection For Securing Your Network Perimeter

Organizations around the world depend on the Raptor Firewall's award-winning architecture and functionality to secure their private networks. The Raptor Firewall's intuitive management interface and high performance, multi-threaded services, make it the most secure, manageable, and flexible solution for your enterprise Internet security needs.

The Raptor Firewall for Windows NT, Solaris, and HP provides complete network protection by integrating application-level proxies, network circuits and packet filtering into a unique perimeter security architecture. This data inspection technology ensures that the data entering and leaving your corporate network is validated at all levels of the protocol stack. In addition to security the Raptor Firewall includes:

- The Raptor Management Console (RMC) for easy management of local and remote firewalls.
- Standards based VPN support (IPSec and Internet Key Exchange(IKE)) for connecting to remote offices and users.
- A comprehensive selection of strong user authentication alternatives.
- WebNOT and NewsNOT – the only firewall-integrated content blockers for filtering WWW and Internet Usenet groups
- High availability, which enables system failover for maximum security uptime.

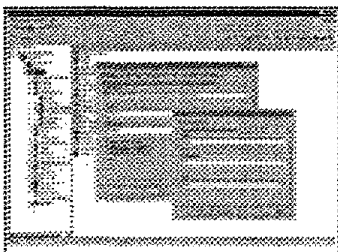
300753



Easy Setup and Scalable Management

The Raptor Management Console (RMC) simplifies policy configuration and management by implementing Microsoft's Management Console (MMC) technology. The RMC displays a complete list of firewalls under management in one window pane and firewall specific data in an adjacent pane. Coupled with a centralized alarming system, a network administrator can easily manage local and remote firewalls from a single Windows NT workstation. A local management console is also provided for UNIX based Raptor Firewalls.

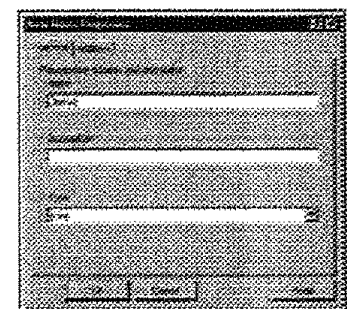
MMC Screenshots (click on for larger version)



Manage and configure distributed firewalls from a single console.



Centralized monitoring of multiple firewalls.



The flexibility to build security rules consistent with business needs.

300754

Integrated Virtual Private Networking (VPN)

Raptor Firewall includes an integrated VPN module that enables network administrators to securely extend corporate networks, across the Internet, to remote offices and users. The Raptor VPN solution includes strong user

authentication, data encryption and data integrity to ensure the security of the information as it passes across private WANs and the Internet.

Comprehensive Logging and Reporting

The Raptor Firewall log files contain information that includes: session duration; byte counts; full URLs; user names and authentication methods. Administrators can use this information to generate detailed statistical and session trend reports ... or they can export to databases to perform custom analysis.

A Comprehensive Architecture for Security Policy Management

Raptor Firewall's unique combination of application-level proxies, network circuits and packet filtering ensure that data traversing the firewall is completely managed by the network administrator. This allows the administrator to build network policies that are consistent with corporate policies.

In addition to secure application proxies, Raptor Firewalls use a unique best-fit algorithm for matching access rules to connection attempts. As a result, they allow administrators to create rules in any order without inadvertently creating security holes. Only access attempts that meet the exacting requirements of an explicit rule are permitted.

Features and Benefits

Features	Benefits
Management	<ul style="list-style-type: none"> • Cross-platform (UNIX and NT) firewall management from a single console • Reliance on best fit, non-order-dependent, explicit rules rather than filtering criteria to evaluate connection attempts
Security	<ul style="list-style-type: none"> • Extensive built-in application-proxy support for popular protocols • Automatic and continuous system hardening of the firewall host to protect against intrusions into the firewall system • Automatic blocking of all TCP and UDP ports • Integrated anti-spamming measures to harden the system • Integrated anti-spoof and IP routing protection • ICSA certified
Scalability	<ul style="list-style-type: none"> • Support for multiple network cards for protecting WWW, FTP, Email servers that need to be directly accessed from the Internet • Completely configurable Network Address Translation (NAT) for hiding/exposing server and client addresses • Support for symmetric multiprocessing (SMP) • Cross-platform support
Extensibility	<ul style="list-style-type: none"> • Support for Virtual Private Networks (VPNs) with: <ul style="list-style-type: none"> • Encryption: DES40, DES56, Triple DES • Authentication: ISAKMP/Oakley key management • Protocols: IPSec, and swiPe security protocols • Network Options: Ethernet, Fast Ethernet, Token Ring, Frame Relay, ATM, & FDDI • Year 2000 compliant

Platforms and Specifications

- **Windows NT 4.0 (Intel Pentium)**— Recommended configuration is a Intel Pentium II 300MHz or better.
- **Solaris 2.5.1 & 2.6 (SPARC)**— Recommended configuration is a SPARC station Sbus or PCI system.
- **HP/UX (PARC)** - Recommended configuration is HP9000 Series 700 and 800 E 35 systems.
- **Monitor**—Color w/Super VGA, 1024 X 768 resolution.
- **RAM**—32MB of RAM minimum, 64MB recommended.
- **Disk**—1GB hard disk; 200 MB minimum Swap File.
- **Other** - Mouse or pointing device, CD-ROM drive, minimum of two network interface cards.

300756

Product Options

HP CD-Writer Plus 7500e Series — Flexible, Portable, and Easy to Install!

Easy to Use, Easy to Install

Congratulations on your decision to purchase an HP CD-Writer Plus. Take this page with you when you shop for your HP CD-Writer Plus 7500e series drive.



HP CD-Writer 7500e
HP CD-Writer 7510e

Fun and Flexible!

Back up projects on home and office PCs, transport files to various work locations, and more:

- Take it with you! Plugs into any PC parallel port, anywhere — including laptop computers.
- Save large presentations, reports, and CAD files to CD, then reclaim precious hard drive space.
- Back up your hard drive, e-mail messages, or critical projects for added security.
- Great for home and school projects! Back up your home PC, create and save large multimedia projects, and record your own music to share with friends and family.

Speeds

2x Write, 2x Rewrite, 24x Read

Minimum System Requirements

IBM or compatible with Pentium processor (133 MHz or above), 32 MB RAM, 15-110 MB free hard drive space for installing software, 10 MB free space for each minute of recorded music; Microsoft Windows 95 and 98 or

Windows NT 4.0 with SP3. (Note: Windows NT server not supported.) Sound card required for 7510e for certain applications.

HP CD-Writer Plus — The Storage Technology of Choice

- Save 650 megabytes of data on a single CD
- Write and re-write large files
- Create your own CDs
- Easy as using a floppy disk
- Share files with anyone, anywhere when saving on CD-R media
- It's from HP, the leader in storage technology

CD Media is Affordable, Portable, and Durable

Approximate Cost of various Media	Approximate Cost per 650 Megabytes
650-megabyte CD-R disc \$1.00 each	\$1.00
650-megabyte CD-RW disc \$6.00 each	\$6.00
144-megabyte floppy diskette \$5.50 each	\$225.00
100-megabyte removable cartridge \$15.00 each	\$97.00
2-gigabyte removable cartridge \$125.00 each	\$40.00

300757

Visit the web site!

Visit the HP CD-Writer site at www.hpcdwriter.com. Be sure to sign up for the CD-Writer newsletter on the web site! Learn tips and techniques and read about the latest technology.

Software

Specifications

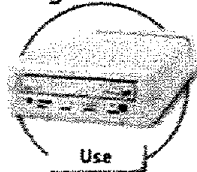
Printable Flyer

HP CD-Writer Plus 7500e Series

Easy to Connect. Easy to Use!

Don't have an open bay on your computer? No problem! Plug this external CD-R drive into any PC parallel port, anywhere—installation is fast and easy! Plus, the HP CD-Writer Plus 7500e series is perfect if you're not comfortable installing an internal drive.

Easy to...



At a Glance

- External CD-RW (rewritable) drive for PCs
- Speeds: 2x2x6x
- Perfect for: Small Offices Home/Personal Use
- Includes powerful software package
- 7500e also includes Corel Print Office
- 7510e also includes ACID Music Creator

Perfect for Small Businesses

- Get high ROI for a small investment. Buy one and share this portable peripheral from desk to desk.
- Save large files to CD to reclaim precious hard-drive space.
- Back up critical projects for added security.
- Organize and store all files related to completed projects on CD.

Great for Home and School

- Be creative! Compile a "slide show" of vacation photos, save on CD, and take your external drive and CD with you to relive the good times with friends and family!
- Save files from your home PC to reclaim hard-drive space. Then quickly and easily connect it to your laptop computer to back up important business documents.
- Great for school projects! Compile a multimedia science project, and save it on CD. Connect your external drive to a school computer to present your findings.

Fast and Easy!

- Easy to install! Just plug this external drive into a PC parallel port on your computer or laptop. No open bay is required.
- HP Fast Format lets you begin writing to a CD-RW disc in less than 5 minutes!
- It's from Hewlett-Packard, so you know your HP CD-Writer Plus is backed by quality, reliability, and superior support.

**Fast
Fact**

Included Software Adds Power, Flexibility, and Fun!

300758

- Adaptec DirectCD and Easy CD Creator—Drag-and-drop your data, photo, audio, and video files for easy storage and access.
- HP Simple Trax—Automatically back up, index, and find your files.
- HP Disaster Recovery—Quickly and easily restores your hard drive files and operating system.
- Corel Print Office—Easily create professional-looking documents. (Included only with the HP CD-Writer Plus 7500e.)
- ACID Music Creator—Create great-sounding music CDs. (Included only with the HP CD-Writer Plus 7510e.)

Learn more about the powerful included software.

300759

Software

Specifications

Printable Page

HP CD-Writer Plus 7500e Series

Easy to Connect, Easy to Use!

System Features

Interface	IEEE 1284 compliant parallel port
Loading Mechanism	Tray, dust sealed
Transfer Rates	Read: Up to 6X (1X=150 KB/s) Write: 2X (CD-R); 2X (CD-RW)
Buffering	1 Mbyte (6 sec at 1X speed)
Write Methods	Track at once Disc at once Incremental (packet) Multisession
Power Requirements	+5V DC, 1.2A; +12V DC, 0.8A
Write Verification	Automatic power control to dynamically adjust laser with power
Format and ECC Standard	Red, Yellow, Orange, Green Books
Logical Recording Format	UDF and ISO 9660
Encoding Method	EFM
Media	CD-RW or CD-R

Performance

Sustained Transfer Rates

1X read/write

Audio or data Mode 2, Form 2: 175 KB/sec.
Data (Mode 1 or Mode 2, Form1): 150 KB/sec.

2X read/write

Audio or data Mode 2, Form 2: 350 KB/sec
Data (Mode 1 or Mode 2, Form1): 300 KB/sec.

4X read only

Audio or data Mode 2, Form 2: 700 KB/sec.
Data (Mode 1 or Mode 2, Form1): 600 KB/sec.

6X read only

Audio or data Mode 2, Form 2: 1,050 KB/sec.
Data (Mode 1 or Mode 2, Form1): 900 KB/sec.**Minimum Burst
Transfer Rate** 2.5 Mbytes/sec.

300760

Transfer Rate

Seek Time	125 ms one-third stroke
Spin-Up Time	2 seconds max.
Initialization Time	5 seconds max.
HP Fast Format Time	5 minutes max.
Disc Finalization Time	2 minutes typical

Reliability

Overall MTBF	150,000 power-on hours
Corrected Error Rate	Audio, Mode 2, and Mode 2 Form 2: Less than 1 uncorrectable frame in 10^9 bits read Mode 1, and Mode 2 Form 1: Less than 1 uncorrectable frame in 10^{12} bits read

Media Compatibility

Compatible with CD-R (writable) and CD-RW (rewritable) discs.

HP Part Numbers

HP CD-Writer Plus 7500e C4412A
HP CD-Writer Plus 7510e C4413A

System Includes

HP CD-Writer Plus 7500e—External drive, installation guide (CD); Adaptec DirectCD and Easy CD Creator; Corel Print Office Software; HP Simple Trax 2.0 and HP Disaster Recovery Software; External data cable; Audio cable; One blank HP CD-RW ReWritable disc and one blank HP CD-R Recordable disc.

HP CD-Writer Plus 7510e—External drive, installation guide (CD); Adaptec DirectCD and Easy CD Creator; ACID Music Creator Software; HP Simple Trax 2.0 and HP Disaster Recovery Software; External data cable; Audio cable; One blank HP CD-RW ReWritable disc and one blank HP CD-R Recordable disc.

Minimum System Requirements

HP CD-Writer Plus 7500e—IBM or compatible with Pentium processor (133 Mhz or above), 32 MB RAM, 15-110 MB free hard drive space for installing software, 10 MB free space for each minute of recorded music; Microsoft Windows 9x or Windows NT 4.0 with SP3. Note: Windows NT server not supported.

HP CD-Writer Plus 7510e—IBM or compatible with Pentium processor (133 Mhz or above), 32 MB RAM, 15-110 MB free hard drive space for installing software, 10 MB free space for

300761

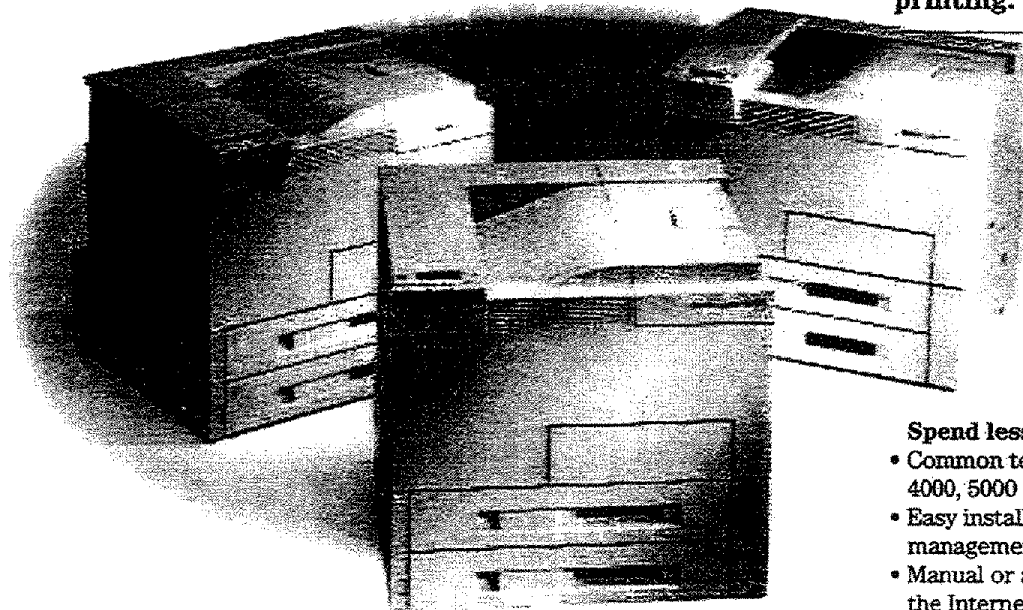
hard drive space for installing software, 10 MB free space for each minute of recorded music; Microsoft Windows 9x or Windows NT 4.0 with SP3. Note: Windows NT server not supported. Sound card required for certain applications.

300762

HP LaserJet 8000 Series printers.

Technical Data

**The new standard for
departmental network
printing.**



Continuing its tradition of offering practical, innovative network printing solutions, HP introduces HP LaserJet 8000 Series printers. They combine the latest technologies with exceptional performance to give you truly hassle-free network printing for medium to large departments.

What's more, HP LaserJet 8000 Series printers have new features that can provide outstanding output with a variety of media and paper-handling options, help improve performance while minimizing network traffic, and reduce your overall cost of ownership. Best of all, they come with something you can't get anywhere else—HP's unparalleled reputation for quality, reliability and compatibility.

For a complete network printing solution, HP JetDirect print servers provide connectivity for Fast Ethernet, Ethernet, Token Ring and LocalTalk environments, supplying cost-effective printer access to your entire department. And HP Web JetAdmin management software lets you remotely install, configure and proactively manage your printers from a common web browser—reducing your day-to-day support requirements.

It all adds up to the most hassle-free, easily managed network printing solution you can find for your department.

Spend less time on printer issues.

- Common technologies among HP LaserJet 4000, 5000 and 8000 Series printers
- Easy installation, configuration and management with HP Web JetAdmin
- Manual or automatic driver updates off the Internet
- Fewer help desk calls thanks to intuitive operations

Get optimum output, fast.

- RAM-based copying with dynamic RIP-once for fast, efficient multiple original prints (copies) over your network
- 1200-dpi quality without the usual speed, memory and network congestion penalties
- Increased data throughput and faster processing
- 15-second first page out*
- More efficient printing of large or complex jobs with 16 MB of standard memory (24 MB on HP LaserJet 8000 DN model)

Enhanced paper handling for increased productivity.

- Handles a wide range of paper sizes, up to 11 x 17 inches
- Offers straight-through paper path to prevent curling of heavier media and envelopes
- Variety of input and output sources reduces trips to the printer

*Throughput is application- and system-dependent. Optimal performance achieved with the most current software application drivers, recommended memory and I/O configurations.

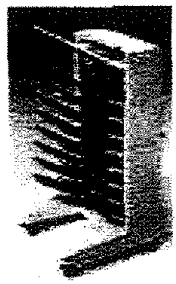
Hassle-free network printing for your whole department.

Customize your HP LaserJet 8000 Series printer for your department with these quality HP accessories.

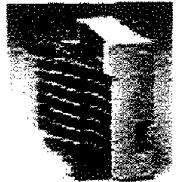
You can customize HP LaserJet 8000 Series printers for multiple original prints (copies) with options like the 2,000 sheet high capacity input tray and 5-bin mailbox with stapler shown above.



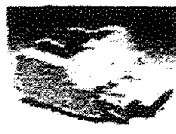
Additional 2 x 500-sheet input tray gives you multiple input sources with a variety of media.



8-bin mailbox makes retrieving documents easy. Automatically sorts jobs into 8 bins with a capacity of 250 sheets each.



7-bin mailbox can fit right on a desk or tabletop. Automatically sorts job output into 7 bins with a capacity of 125 sheets each.



Optional envelope feeder lets users print up to 100 envelopes without reducing paper capacity.



Duplexer saves paper and money by letting you print up to 11 x 17 inch images on both sides of a page (standard on HP LaserJet 8000 DN model).



>1-GB EIO disk drive (shown above) and flash memory DIMMs provide expanded storage of forms, fonts and signatures.



HP JetDirect 600N Internal Print Servers connect printers to your network anywhere in the office and let you manage them remotely with HP Web JetAdmin printer management software.



Replacement toner cartridge contains microfine toner and prints 15,000 pages (based on 5% coverage).

Get more for your money—
right out of the box.

Easier Integration and Management

- HP Web JetAdmin provides simple installation, configuration and management from a common web browser
- HP Internet Installer and Oil Change for HP Customers give you automatic access to the latest printer drivers
- HP PCL 5e, HP PCL 6 and PostScript Level 2 emulation ensure compatibility with both PC and Macintosh files

Improved Performance

- 24-page-per-minute (ppm) engine and a new 133-MHz RISC processor mean less time spent waiting for your output
- 16 MB of standard memory lets you copy and RIP-once in dynamic RAM
- Three 32-bit PCI-based Enhanced I/O (EIO) interface slots provide greater flexibility for HP JetDirect 600N Internal Print Servers and accessories

Versatile Paper Handling

- Prints from 3.9 x 7.5 inch to 11 x 17 inch full-bleed for maximum versatility
- Large standard input capacity of 1,100 sheets reduces paper reloading
- Optional duplexer for two-sided printing (standard on HP LaserJet 8000 DN)
- Optional input sources (either one 2,000-sheet tray or 2 x 500-sheet tray) let you print on multiple paper sizes without swapping paper
- Straight-through paper path lets you use a wider variety of paper sizes and weights, and eliminates curling of heavier media and envelopes
- Multibin mailboxes with collation and stapling simplify complex jobs
- New 7-bin mailbox fits right on a desk or tabletop

Expandable

- HP JetAssist connector lets you easily add third-party paper-handling accessories
- Up to three open EIO interface slots for HP JetDirect 600N Internal Print Servers and accessories
- Up to 192 MB of memory with DIMM memory modules
- HP JetSend allows direct communication between printers, scanners and other information appliances without using the PC as the intermediary

Superior Print Quality

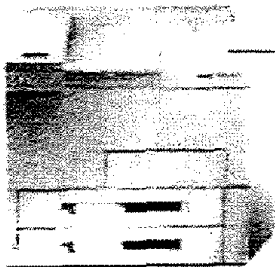
- HP FastRes 1200 prints 1200-dpi quality at the same speed as 600 dpi using standard memory

300764

How to choose the right HP LaserJet 8000 Series printer for your department.

All three HP LaserJet 8000 Series printers feature innovative technologies that can significantly reduce printer interaction. To decide which one is right for your department, look through these descriptions.

I need an expandable departmental printer.

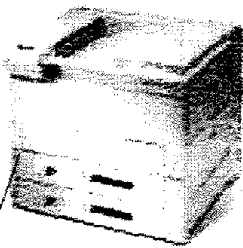


HP LaserJet 8000
printer

The HP LaserJet 8000 printer comes with:

- 24-page-per-minute engine and 133-MHz RISC processor for faster printing
- HP PCL 6 and PostScript Level 2 emulation to ensure compatibility
- RAM-based mcopying with dynamic RIP-once for faster multiple original printing, reduced network traffic and faster return-to-application times
- 16 MB standard RAM (memory expansion up to 192 MB)
- Improved drivers with intuitive interfaces and automatic Internet update capability
- HP Web JetAdmin or HP JetAdmin printer management software for easy installation and management
- Bidirectional IEEE 1284-compliant parallel interface
- Ability to print and duplex up to 11 x 17 inches
- 100-sheet multi-purpose tray (Tray 1) and 2 x 500-sheet input tray
- 2 open DIMM memory slots
- 3 EIO interface slots for HP JetDirect 600N Internal Print Servers and accessories

I need a network-ready departmental printer.



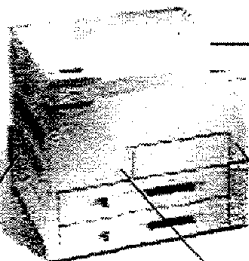
HP LaserJet 8000 N
printer

In addition to all the features found on the HP LaserJet 8000 printer, the HP LaserJet 8000 N also comes with:

- 10/100Base-TX HP JetDirect 600N Internal Print Server

10/100Base-TX HP JetDirect 600N Internal Print Server

I need a network-ready printer with advanced paper-handling capabilities.



HP LaserJet 8000 DN
printer

In addition to all the features found on the HP LaserJet 8000 printer, the HP LaserJet 8000 DN also comes with:

- 10/100Base-TX HP JetDirect 600N Internal Print Server
- 8 MB additional memory (24 MB total)
- Duplex assembly for printing on both sides of the page (up to 11 x 17 inches)

10/100Base-TX HP JetDirect
600N Internal Print Server

Duplexer

24 MB of memory

300765

Specifications.

Speed and Throughput

- Up to 24-page-per-minute rated engine speed for letter documents
- 133-MHz RISC processor
- First page out in as little as 15 seconds*
- RAM-based mcopying with dynamic RIP-once to reduce network traffic and allow fast, efficient multiple original prints (copies) over the network
- User-friendly graphical interface that is consistent with HP LaserJet 4000 and HP LaserJet 5000 Series printers
- Intuitive touch- and menu-driven selections as well as friendly graphical help buttons throughout the drivers

Duty Cycle

- Up to 130,000 pages per month

Resolution

- HP FastRes 1200 (1200-dpi quality) at engine speed
- 600 dpi
- 300 dpi
- Resolution Enhancement technology (RET)
- Optimized halftoning with up to 220 levels of gray
- Prints to within 1/8-inch from edge of page (full-bleed printing on oversized paper by trimming)

Memory

HP LaserJet 8000 and HP LaserJet 8000 N printers:

- 16 MB standard RAM with Memory Enhancement technology (MET)
- Two open 100-pin DIMM slots for memory expansion up to 192 MB
- Sufficient standard memory to mcopy and RIP-once in dynamic RAM

HP LaserJet 8000 DN printer:

- 24 MB standard RAM with Memory Enhancement technology (MET)
- Two open 100-pin DIMM slots with memory expansion up to 192 MB
- Sufficient standard memory to mcopy and RIP-once in dynamic RAM

All HP LaserJet 8000 Series printers:

- Optional >1-GB disk drive for storage of forms, fonts and signatures as well as mcopy and RIP-once
- Optional 2 and 4 MB Flash DIMMs

Printer Management

- HP Web JetAdmin printer management software available from HP's web site (www.hp.com/go/webjetadmin) for simple installation, configuration and management from a common web browser
- Enhanced HP JetAdmin printer management software provides easy printer setup, use and management
- Enhanced driver support of standard printer features for Microsoft® Windows NT® workstation 3.51/4 x, Microsoft® Windows® 95, Windows® 3.x, Macintosh, UNIX (HP-UX, Solaris SunOS, IBM OS/2 Warp and MS-DOS®)
- Internet Installer can automatically update any of the printer drivers in Windows 95 and Windows NT 3.51/4 x environments
- All printer software and driver utilities ship on one CD-ROM
- HP Toolbox utilities for Novell and Microsoft Windows NT
- SNMP- and industry-standard printer MIB-compliant for network management compatibility
- Bidirectional feedback on printing and printer status via HP Toolbox utility
- HP JetSend-enabled

Connectivity

HP LaserJet 8000 printer:

- Bidirectional, IEEE 1284-compliant parallel interface
- Three open EIO interface slots for HP JetDirect 600N Internal Print Servers and accessories

HP LaserJet 8000 N printer:

- HP JetDirect 600N Internal Print Server for auto-sensing Fast Ethernet 10/100Base-TX networks

- Bidirectional, IEEE 1284-compliant parallel interface

- Two open EIO interface slots for HP JetDirect 600N Internal Print Servers and accessories

HP LaserJet 8000 DN printer:

- HP JetDirect 600N Internal Print Server for auto-sensing Fast Ethernet 10/100Base-TX networks

- Bidirectional, IEEE 1284-compliant parallel interface




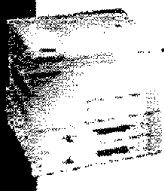



- Two open EIO interface slots for HP JetDirect 600N Internal Print Servers and accessories

All HP LaserJet 8000 Series printers:

- HP JetSend-enabled. HP has developed device-to-device communication technology that enables communication between printers, scanners and a broad range of other information appliances
- Automatic switching between languages and ports
- HP Web JetAdmin and HP JetAdmin printer management software
- Optional HP JetDirect 600N Internal Print Servers for Fast Ethernet, Ethernet, Token Ring and LocalTalk environments

Interface and Cable

- Parallel A to C cable supplied in the base
- Network models assume HP network connect (p/n C2946A) 3-meter cable—HP Vectra, IBM PC/AT and compatibles standard

 <p>Windows 95, Windows for Workgroups</p>	IPX/SPX <ul style="list-style-type: none"> • Novell NetWare v3.11, 3.12, 4.0, 4.1 • Novell NDS and NDPS • Microsoft Windows 95 Networking • Microsoft Windows NT 3.51, 4.0 	
 <p>NetWare</p>	DLC/LLC <ul style="list-style-type: none"> • IBM OS/2 Warp v3.0, 4.0 • IBM OS/2 Warp Server v4.0 • Microsoft Windows NT v3.51, 4.0 <ul style="list-style-type: none"> • Microsoft Windows for Workgroups v3.1, 3.11 • Artisoft LANtastic v7.0 	
 <p>Windows NT</p>		
 <p>OS/2 Warp</p>		TCP/IP <ul style="list-style-type: none"> • HP-UX v9.x (700 and 800 series), 10.x, 11.x • SunOS v4.1.3, 4.1.4 • Solaris v2.3, 2.4, 2.5.x, 2.6 • IBM OS/2 Warp v3.0, 4.0 • IBM OS/2 Warp Server 4.0 • IBM AIX v3.2.5 and later • SCO UNIX® V/386® v3.2, 4.2, 5.0 • Microsoft Windows NT v3.51, 4.0 • Microsoft Windows 95 Networking • Ipd • MPE-iX v5.5
 <p>UNIX</p>		EtherTalk <ul style="list-style-type: none"> • AppleTalk (System 7) (Ethernet cards only) • Apple LocalTalk (HP J3111A only, System 7)
 <p>Macintosh</p>		

* Software is provided directly by the operating system vendor.

* Throughput is application- and system-dependent. Optimal performance achieved with the most current software application drivers, recommended memory and I/O configurations.

300766

Specifications.

Paper Handling

- Up to five input sources with a total capacity of 3,100 sheets and 100 envelopes OR up to six input sources with a total capacity of 2,100 sheets and 100 envelopes
- Standard input capacity of 1,100 sheets (100-sheet Tray 1 and 2 x 500-sheet tray)
- Standard output capacity of 600 sheets (500 sheets face-down and 100 sheets face-up)
- "Output full" sensor (face-down bin and mailboxes)
- Straight-through paper path (face-up bin only)
- HP JetAssist connector for easy installation of paper-handling accessories
- Optional duplex printing assembly capable of handling 11 x 17 sheets (standard on HP LaserJet 8000 DN)
- Optional 2,000-sheet or 2 x 500-sheet input tray
- Optional 8-bin mailbox, 5-bin mailbox with stapler or 7-bin tabletop mailbox
- Optional 100-envelope power feeder

Printer Languages

- HP PCL 5e, HP PCL 6, PostScript Level 2 emulation
- Automatic language switching

Font Capabilities

- 80 scalable TrueType® built-in with 65 additional scalable typefaces on disk for Windows
- PostScript Level 2 emulation
- HP FontSmart software provides easy-to-use font management capabilities
- Intellifont and TrueType rasterizers built in
- Greek, Hebrew, Cyrillic, and Arabic fonts available for Europe
- Korean, Traditional and Simplified Chinese fonts available for Asia

Paper

- Copier, bond, special application, recycled paper and transparencies
- Standard paper tray #1: 60 to 199 g/m² (16 to 53 lb)
- Tray #2 and #3: 60 to 105 g/m² (16 to 28 lb)
- Optional 2,000-sheet tray: 60 to 105 g/m² (16 to 28 lb)
- Optional 2 x 500-sheet input device and duplexer: 60 to 105 g/m² (16 to 28 lb)
- Overhead transparencies and labels designed for laser printers using tray #1

Paper Types

- Tray #1: A3, A4, B/Ledger, maximum 11.7 x 17.7, B4, Letter, Legal, Executive, B5, Monarch
- Tray #2: A4, B4, Letter, Legal
- Tray #3: A4, B4, Letter, Legal, 11 x 17, A3
- Optional 2,000-sheet input tray: Letter, Legal, A4, B4, 11 x 17, A3
- Optional 2 x 500-sheet input (Tray #4: A4, B4, Letter, Legal; Tray #5: A4, B4, Letter, Legal, 11 x 17, A3)

Envelope Sizes

- #10 regular: 241 x 105 mm; 9.5 x 4.125 in (printable: 235 x 10 mm; 9.27 x 3.93 in)
- Monarch: 191 x 98 mm; 7.5 x 3.875 in (printable: 185 x 93 mm; 7.27 x 3.68 in)
- DL: 220 x 110 mm; 8.66 x 4.33 in (printable: 214 x 105 mm; 8.43 x 4.14 in)
- C5: 229 x 162 mm; 9.02 x 6.38 in (printable: 223 x 157 mm; 8.79 x 6.19 in)
- B5: 250 x 176 mm; 9.85 x 6.93 in (printable: 244 x 171 mm; 9.62 x 6.74 in)

Print Orientation

- Portrait, landscape and reverse landscape

Control Panel

- Intuitive operation and complete easy-to-understand messages
- 2 x 16 backlit display with rocker switches to go forward or reverse through the menus
- Buttons: Job Cancel, Go, Menu, Item, Value, Select
- Indicators: Ready, Data, Attention
- Control panel can be locked through software
- Messages can be displayed in 17 languages: Danish, Dutch, English, Finnish, French, German, Italian, Norwegian, Polish, Portuguese, Spanish, Swedish, Turkish, Russian, Hungarian, Czech and Katakana

Internet

- HP Web JetAdmin printer management software for easy installation, configuration and management from a common web browser
- Internet Installer for easy downloading and updating of software
- Software utility for manual or automatic driver updates off the Internet
- Internet page set-up utility formats and prints Internet pages, polls the Internet for requested addresses and schedules printing of requested pages as required
- Internet software disk replication utility for distributing custom drivers

Environmental Ranges

Temperature for printer and toner:

- Operating: 10° to 32.5° C (50° to 91° F)
- Storage: 0° to 35° C (32° to 95° F)

Humidity for printer and toner:

- Operating: 20% to 80% RH.
- Storage: 10% to 95% RH

Acoustics for printer and toner:

- Operator position: L<57 dB (A) printing, L<42 dB (A) standby (per ISO 9296, DIN 45635, T.19)
- Bystander 1m: L<51 dB (A) printing, L<37 dB (A) standby (per ISO 7779, DIN 45635, T.19)
- Sound Power: L=6.6 bels (A) printing, L=5.3 bels (A) standby (per ISO 9296)

Power Requirements

Source:

- 100-120 volts (+/- 10%), 50/60 Hz (+/- 2 Hz)
- 127 volts, 60 Hz NOM or 220-240 volts (+/- 10%), 50 Hz (+/- 2 Hz)
- 220 volts (+/- 10%), 60 Hz (+/- 2 Hz)
- Printer's voltage ranges depend upon the country in which the printer is purchased

Minimum circuit capacity:

- 100-127 volts @ 12.8 amps or 220-240 volts @ 5.8 amps

Power Consumption:

- Printer with accessories = 550 watts printing, 150 watts standby, and 41 watts Powersave mode; Printer only = 505 watts printing, 140 watts standby, and 35 watts Powersave
- U.S. EPA Energy Star-qualified

Dimensions (H x W x D)

540 x 540 x 520 mm (21.3 x 21.3 x 20.5 in)

Weight (without toner cartridge or options): 45 kg (99 lb)

Product Certifications

UL/cUL listed to UL 1950 and CSA C22.2 No. 950; complies with IEC 950/EN 60950, FCC Class B certified, CISPR-22 level B, Product CDRH certified Class I Laser Product (safe for office/EDP use)

Warranty

One-year onsite warranty

300767



Ordering information.

Number	Description
Printers	
C4085A	HP LaserJet 8000 general office printer for medium to large departments
C4086A	HP LaserJet 8000 N network-ready general office printer for medium to large departments
C4087A	HP LaserJet 8000 DN network-ready general office printer with duplex assembly

Supplies and Accessories

C3909A	Replacement toner cartridge (prints 15,000 pages, based on 5% coverage)
C4780A	2 x 500-sheet multiple input tray
C4781A	2,000-sheet high-capacity input tray
C4782A	Duplex assembly for two-sided printing
C4783A	7-bin tabletop mailbox
C4784A	Stand for 7-bin mailbox
C4785A	8-bin mailbox
C4787A	5-bin mailbox with stapler
C3765B	Envelope feeder
C2975A	Printer cabinet
C2985A	>1-GB disk drive
H5494A	HP SupportPack for hardware services; 3-year, 4-hour, response onsite

HP JetDirect 600N Internal Print Servers

J3110A	For Ethernet 10Base-T networks
J3111A	For Ethernet 10Base-T/10Base2 and LocalTalk networks
J3112A	For Token Ring networks
J3113A	For Fast Ethernet 10/100Base-TX networks (standard on HP LaserJet 8000 N and 8000 DN)

Interfaces and Cables

C2946A	Parallel 3-meter cable A to C
C2947A	Parallel 10-meter cable A to C

Memory

C4286A	2 MB Flash DIMM
C4287A	4 MB Flash DIMM
C4135A	4 MB EDO DIMM
C4136A	8 MB EDO DIMM
C4137A	16 MB EDO DIMM
C4140A	4 MB SDRAM DIMM
C4141A	8 MB SDRAM DIMM
C4142A	16 MB SDRAM DIMM
C4143A	32 MB SDRAM DIMM
C3913A	64 MB SDRAM DIMM

For more information, printer drivers and network printer management software, visit our HP LaserJet 8000 Series printer web site at www.solutionjet.hp.com/lj8000

Information about HP products, plus software and driver distribution, is available through Hewlett-Packard's home page on the World Wide Web: www.hp.com.

Hewlett-Packard peripherals, personal computers, supplies and accessories are available at authorized HP resellers worldwide. Call for the authorized HP reseller nearest you:

United States: (800) LASERJET (527-3753)
Canada: (800) 387-3967
Asia Pacific: (852) 2599 7777
Australia/New Zealand: (61-3) 9272 2895
Europe/Africa/Middle East: (41) 22 780 8111
Japan: (03) 3331 6111
Latin America: (305) 267-4220 (Miami)
(525) 326-4044 (Mexico City)

If you have questions about HP LaserJet 8000 Series printers, there are a number of places you can turn to for answers:

- The HP Customer Support Center for fast assistance by telephone: (208) 323-2551*.
- HP Automated Support Access Program (HP ASAP) provides answers and fax support for hardware and software information 24 hours a day; (800) 333-1917*.
- HP Driver and Software Distribution for optional software solutions and printer drivers for most popular applications: (970) 339-7009*.
- The HP Peripherals Forum on CompuServe ("GO HPPER") provides software and driver distribution, and puts you in contact with other HP printer users who may be able to give online responses to technical questions.
- AppleLink's HP folder provides online product information and drivers.

* These services are based in the United States. Outside the U.S., call your HP regional office for information on country-specific support.

TrueType is a U.S. trademark of Apple Computer, Inc. Microsoft, Windows, Windows NT and MS-DOS are U.S. registered trademarks of Microsoft Corp. UNIX is a registered trademark in the United States and other countries, licensed exclusively through X/Open Company Limited. Energy Star is a U.S. registered service mark of the United States Environmental Protection Agency. All other brand and product names are trademarks or registered trademarks of their respective companies.



As an Energy Star partner, Hewlett-Packard has determined that these products meet the Energy Star guidelines for energy efficiency.

The information in this document is subject to change without notice.

Printed in the USA on recycled paper 4/98
© Hewlett-Packard Company 1998
5966-4425EUC



300768

Bureau #1

Date : 10 August 1999

Time : 15:34:36

Currency : DOLLARS

Hardware Price File : RS6PRC HWUS 03 AUG 1999

PCRS6000 Version : 05.08.13

Last Build : 27 July 1999

The IBM Portable Configurator (TM) is classified for proposal usage only. Commitments on prices and products should not be made without complete verification with the sales manuals. Prices are for your information only and are subject to change. Applicable taxes are not shown.

***** HARDWARE *****

Product	Description	Qty	Purchase	Maint
	332MHz Wide Node (2051)	1	26000	260
	Integrated Ethernet Adapter	1	N/C	
	Integrated SCSI-2 Fast/Wide Adapte	1	N/C	
2909	9.1 GB Ultra-SCSI Disk Drive Pair	1	2940	
2968	10/100 Mbps Ethernet PCI Adapter	1	275	
4022	SP Switch MX Adapter	1	12500	
4093	Memory Expansion Card	2	2076	
4110	256 MB (2x128MB) SDRAM DIMMs	8	20480	
4320	PowerPC 604e, 332MHz, 2-Way Processor Card	2	20000	240
6209	SCSI-2 Differential Fast/Wide PCI-Bus Adapter	1	600	
6225	Advanced SerialRAID Adapter (PCI)	2	6000	
6235	32 MB Fast-Write Cache Option Card	2	1150	
9431	AIX 4.3 with PSSP V3.1	1	N/C	
			<hr/>	<hr/>
			Price	
			Monthly Maintenance	500
3995-C66	Optical Library Dataserver (4 Drives)	1	49000	395
1442	Two Additional 5.2 GB Extended Multifunction Optical Drives	1	6900	80
7201	Differential	1	599	
7222	20m SCSI-2 Differential F/W PCI Adapter Cable	1	250	
8009	WORM Optical Disk Media, 5.2GB, 10 pack	3	4500	
9008	5.2 GB Extended Multifunction Library	1	N/C	
9907	110/117/120 V, 50/60 Hz Power Cord	1	N/C	
			<hr/>	<hr/>
			3995-C66 Price	
			Monthly Maintenance	475
7133-D40	Advanced SSA Disk Subsystem (Rack-Mounted)	1	12750	200
0550	Hungary Manufacturing Ship Direct	1	N/C	

300769

	to Customer		
8022	50/60Hz AC, 300 VDC Power Supplies	1	2000
8031	Raven Black Drawer Cover	1	250
8509	One 10K/9.1GB Advanced Disk Drive Module	16	48000
8802	2.5m Advanced SSA Cable	4	260
8805	5m Advanced SSA Cable	4	300
9300	Language - English (US)	1	N/C
			<hr/>
	7133-D40 Price		63560
	Monthly Maintenance		200

***** GRAND TOTALS *****

		<hr/>	<hr/>
	Grand Total Price	216,830	
	Monthly Maintenance		1175

N/C - No Charge
W/D - Withdrawn
T&M - Time and Material
N/O - Not Offered
N/A - Price Not Available
*** - Price Not Available

* The following products have been announced to be withdrawn on *
* the dates indicated. *

* Date to be Withdrawn Product/Feature *

September 8 1999 6209 SCSI-2 Differential Fast/Wide PCI-Bus Adapter

300770

Bureau #2

Date : 10 August 1999

Time : 15:35:23

Currency : DOLLARS

Hardware Price File : RS6PRC HWUS 03 AUG 1999

PCRS6000 Version : 05.08.13

Last Build : 27 July 1999

The IBM Portable Configurator (TM) is classified for proposal usage only. Commitments on prices and products should not be made without complete verification with the sales manuals. Prices are for your information only and are subject to change. Applicable taxes are not shown.

***** HARDWARE *****

Product	Description	Qty	Purchase	Maint
	332MHz Wide Node (2051)	1	26000	260
	Integrated Ethernet Adapter	1	N/C	
	Integrated SCSI-2 Fast/Wide Adapte	1	N/C	
2909	9.1 GB Ultra-SCSI Disk Drive Pair	1	2940	
2968	10/100 Mbps Ethernet PCI Adapter	2	550	
4022	SP Switch MX Adapter	1	12500	
4093	Memory Expansion Card	2	2076	
4110	256 MB (2x128MB) SDRAM DIMMs	8	20480	
4320	PowerPC 604e, 332MHz, 2-Way Processor Card	2	20000	240
6209	SCSI-2 Differential Fast/Wide PCI-Bus Adapter	1	600	
6225	Advanced SerialRAID Adapter (PCI)	2	6000	
6235	32 MB Fast-Write Cache Option Card	2	1150	
9431	AIX 4.3 with PSSP V3.1	1	N/C	
	Price		92296	
	Monthly Maintenance			500
7133-D40	Advanced SSA Disk Subsystem (Rack-Mounted)	1	12750	200
0550	Hungary Manufacturing Ship Direct to Customer	1	N/C	
8022	50/60Hz AC, 300 VDC Power Supplies	1	2000	
8031	Raven Black Drawer Cover	1	250	
8509	One 10K/9.1GB Advanced Disk Drive Module	16	48000	
8802	2.5m Advanced SSA Cable	4	260	
8805	5m Advanced SSA Cable	4	300	
9300	Language - English (US)	1	N/C	
	7133-D40 Price		63560	
	Monthly Maintenance			200

***** GRAND TOTALS *****

300771

Grand Total Price
Monthly Maintenance

155856

700

N/C - No Charge
W/D - Withdrawn
T&M - Time and Material
N/O - Not Offered
N/A - Price Not Available
*** - Price Not Available

* The following products have been announced to be withdrawn on *
* the dates indicated. *

* Date to be Withdrawn Product/Feature *

September 8 1999 6209 SCSI-2 Differential Fast/Wide PCI-Bus Adapter

300772

The power to get you there...



RS/6000 SP System

Highlights

Advanced, robust parallel technologies open the door for the next generation of applications

Scalable system performance allows for smooth incremental growth of system resources

Flexible configuration options fit the needs of your business

POWER3 processors and AIX®, IBM's industrial-strength UNIX®, provide deep computing for greater application power

Redundant critical components and concurrent maintenance reduce system outages

Comprehensive system management allows control of the SP™ system from a single workstation

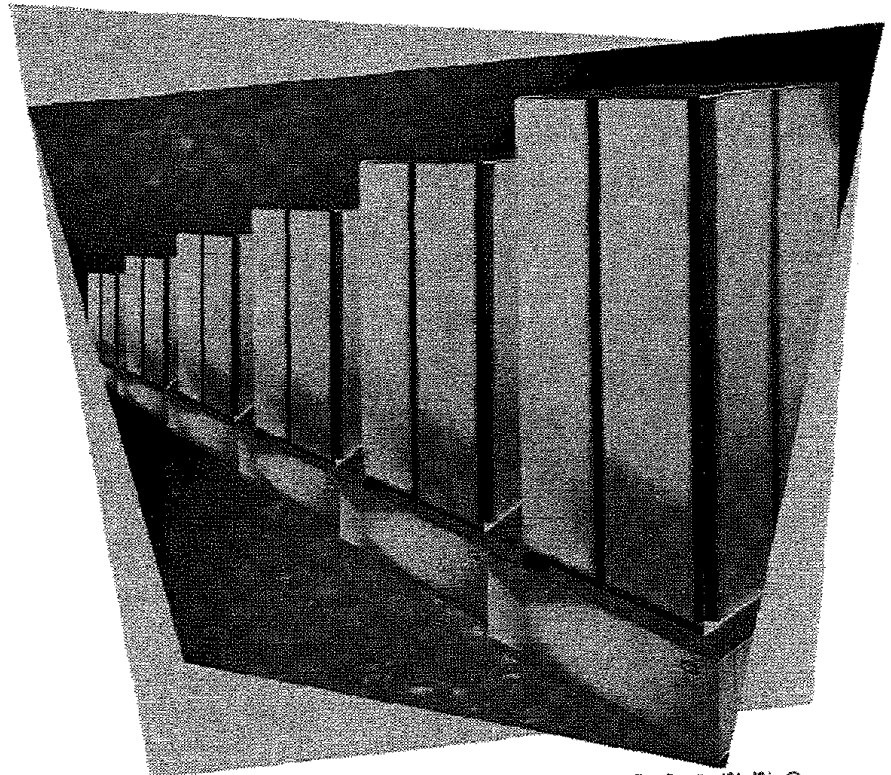
Major software vendors provide support in both commercial and technical computing environments

Proven e-business server set Internet volume records at Wimbledon and the U.S. Open

Product description

The RS/6000® SP high-performance system uses the power of parallel processing to expand your application horizons. Designed for performance and scalability, this system makes feasible the processing of applications characterized by large scale data handling and compute intensity.

Installed in thousands of customer locations worldwide, the SP system delivers solutions for problems ranging from those that challenge your business to some of the most complex deep computing problems. Customer uses include: mission-critical commercial computing solutions to address business intelligence applications, server consolidation, and collaborative computing comprised of Lotus Notes®.



e-business

300773

RS/6000 SP at a glance

Standard configuration		Up to 128 nodes per SP system (512 by special order)	
Node type	POWER3 SMP Thin Node	POWER3 SMP Wide Node	160MHz Thin Node
Processor:	200MHz POWER3 1-, 2-way	200MHz POWER3 1-, 2-way	160MHz P2SC
L1 cache:	64KB data*/32KB instr.*	64KB data*/32KB instr.*	128KB data/32KB instr.
L2 cache:	4MB*	4MB*	—
RAM memory:	256MB	256MB	64MB
Mem. bus width:	128-bit	128-bit	256-bit
Internal storage:	None required ^b	None required ^b	4.5GB
Disk/media bays:	Two	Four	Two
Expansion slots:	Two PCI ^d	Ten PCI*	Four Micro Channel ^e
Nodes per frame tall/short:	Sixteen/eight	Eight/four	Sixteen/eight
Bus speeds:			
for I/O adapters:	132MB/second	132 and 264MB/second (triple bus)	80MB/second
for Switch adapter:	480MB/second	480MB/second	160MB/second
Adapters:	Integrated Ultra SCSI and Ethernet (10/100 Mbps)	Integrated Ultra SCSI and Ethernet (10/100 Mbps)	Integrated SCSI-2 FW and Ethernet (10 Mbps)
System expansion			
RAM:	4GB	4GB	1GB
Internal storage:	36.4GB ^c	72.8GB ^c	18.2GB
SP Switch and adapter:	160MB/second	160MB/second	115MB/second
UNIX operating system:	AIX Version 4 (one- to two-user license included; pre-installation optional)		
Sys. mgmt. software:	Parallel System Support Programs for AIX (PSSP) Versions 2 and 3 (pre-installation optional)		
System dimensions:	Tall frame: 75.8" H x 36" W x 51" D (1925 mm x 914 mm x 1295 mm); 970 to 2000 lbs (441 to 909 kg) Short frame: 49" H x 28" W x 40" D (1245 mm x 711 mm x 1016 mm); 510 to 910 lbs (232 to 414 kg)		
Power requirements:	Tall frame: 200-240 volts (3 Phase) or 380-425 volts (3 Phase) Short frame: 200-240 volts (1 Phase)		
Warranty:	24 x 7, on-site for one year (limited) at no additional cost		

Lotus Domino® Server, Internet, intranet, extranet, and groupware application solutions. The SP database and computation scalability, critical for business intelligence applications including data warehousing, has led to many installations of greater than a terabyte of data. Recognized in the industry as a high-capacity and reliable Web server, the SP system is an ideal base for e-business applications. Numerous companies and organizations worldwide use it to handle their Web sites. Scientific and technical computing users, including corporations, universities, and research laboratories use the SP system for leading-edge applications ranging from seismic processing, computational fluid dynamics, engineering analysis/design, and medical simulation to "Grand Challenge" problems such as global climate modeling.

SP system overview

The SP system can simultaneously bring two to hundreds of RISC processor nodes to a computing problem. Its parallel processing capability enhances computing performance and throughput many times over serial computing. In addition to helping improve the performance of existing applications, new applications, like complex data mining and modelling of the universe, are now possible.

The basic SP building block is the processor node. It consists of a POWER3 symmetric multiprocessor (SMP), PowerPC SMP, or POWER2 Super Chip (P2SC) uniprocessor, memory, PCI or Micro Channel expansion slots for I/O and connectivity, and disk storage devices. The two sizes of nodes, known as thin and wide, may be mixed in a

system and are housed in short or tall system frames. These frames can be interconnected to form a system with up to 128 nodes (512 by special order).

The 332MHz SMP nodes represent the first general availability of the advanced technology used in the Blue Pacific SP system IBM has delivered to Lawrence Livermore National Laboratory as part of the Department of Energy's Accelerated Strategic Computing Initiative (ASCI) project. This system, delivered in October 1998 as the fastest computer in the world, will perform the complex calculations required for the simulation to predict the performance, safety, reliability, and manufacturability of the U.S. nuclear stockpile.

300774

RS/6000 SP at a glance

Standard configuration	Up to 128 nodes per SP system (512 by special order)	
Node type	332MHz SMP Thin Node	332MHz SMP Wide Node
Processor:	332MHz 2-, 4-way PowerPC 604e	332MHz 2-, 4-way PowerPC 604e
L1 cache:	32KB data*/32KB instr.*	32KB data*/32KB instr.*
L2 cache:	256KB ^a	256KB ^a
RAM memory:	256MB	256MB
Mem. bus width:	128-bit	128-bit
Internal storage:	None required ^b	None required ^b
Disk/media bays:	Two	Four
Expansion slots:	Two PCI ^d	Ten PCI ^f
Nodes per frame		
tall/short:	Sixteen/eight	Eight/four
Bus speeds:		
for I/O adapters:	132MB/second	132 and 264MB/second (triple bus)
for Switch adapter:	400MB/second	400MB/second
Adapters:	Integrated SCSI-2 F/W and Ethernet (10 Mbps)	Integrated SCSI-2 F/W and Ethernet (10 Mbps)
System expansion		
RAM:	3GB	3GB
Internal storage:	36.4GB	72.8GB
SP Switch and adapter:	160MB/second	160MB/second
UNIX operating system:	AIX Version 4 (one- to two-user license included; pre-installation optional)	
Sys. mgmt. software:	Parallel System Support Programs for AIX (PSSP) Versions 2 and 3 (pre-installation optional)	
System dimensions:	Tall frame: 75.8" H x 36" W x 51" D (1925 mm x 914 mm x 1295 mm); 970 to 2000 lbs (441 to 909 kg) Short frame: 49" H x 28" W x 40" D (1245 mm x 711 mm x 1016 mm); 510 to 910 lbs (232 to 414 kg)	
Power requirements:	Tall frame: 200-240 volts (3 Phase) or 380-425 volts (3 Phase) Short frame: 200-240 volts (1 Phase)	
Warranty:	24 x 7, on-site for one year (limited) at no additional cost	

* Per processor

^a 32-bit

^b Boot from external storage required if no internal storage

^c Eight 64-bit, two 32-bit

^d Disks must be installed in like pairs to support AIX mirroring

^e Three 64-bit, seven 32-bit

These nodes are also used to power business-critical commercial applications. Charles Schwab & Co., Inc., a recognized leader in Web-based trading, built its trading system on the SP system. This system has scaled smoothly, with Schwab's transaction growth, from the original 10 nodes to its current 60 nodes, serving 1.52 million customers online. United Airlines, a world leader in the airline industry, built a data mining application on the SP system to assist in setting ticket fares on travel routes to maximize profits. Customer travel information is loaded into the SP system for calculation of the most profitable routes, profiles of the customers flying those routes, and how much to charge.

Some of the fastest supercomputers in the world are being built on the 64-bit POWER3 SP nodes. The U.S. National Weather Service's National Centers for Environmental Prediction use the SP system to process more sophisticated models of the atmosphere and oceans to improve national weather, flood, and climate forecasting. The National Partnership for Advanced Computational Infrastructure selected IBM to install the first computer dedicated to academic researchers that is capable of teraflops performance. This supercomputer, to be built on future POWER3 nodes and installed at the San Diego Supercomputer Center, will help researchers tackle deep computing problems such as unlocking the secrets of the human brain, climate modeling, and understanding the origins of the universe.

The RS/6000 Enterprise Server Models S70 and S70 Advanced can also function as though they were SP nodes, via LAN and SP Switch attachment. These servers' exceptional performance is especially impressive for online transaction processing applications. With their large, "single node" data capacity, they are also well-suited to the tasks associated with Enterprise Resource Planning. Plus, their excellent query capability is ideal for today's business intelligence applications. These characteristics combined make both the S70 and S70 Advanced servers an excellent third-tier choice for data storing and serving in three-tier e-business environments where 332MHz SMP nodes are used as the middle tier.

300775

I/O

Effective parallel computing requires high-bandwidth, low-latency internode communications. The SP Switch, a state-of-the-art IBM innovation, provides a bi-directional data-transfer rate of up to 160MB/second between each node pair.

The SP Switch Router is a high-performance I/O gateway which provides the fastest available means of communication between the SP system and the outside world, or among multiple SP systems. This SP gateway combines the Ascend GRF™ with the IBM SP Switch Router Adapter to enable direct network attachment to the SP Switch. Other media cards connect to a variety of standard external networks. Each media card has its own hardware engine, enabling SP I/O to scale nearly one-to-one with the number of cards. This gateway supports excellent SP performance with high-speed communications, and provides connectivity to networks not supported on SP nodes.

The SP system can also scale disk I/O nearly one-to-one with processors and memory, making access to terabytes of data possible and expansions or upgrades easier to manage. If you outgrow your existing system, you can readily add increments of computing power.

Performance

The SP system delivers balanced performance with processor, memory, switch, and I/O scalability. Over time the SP has demonstrated leadership in standard industry benchmarks. For the latest performance information, refer to these Web sites: www.specbench.org and www.ideasinternational.com/benchmark/bench.html. And, an SP e-business server set successive Internet volume records on both the 1998 Wimbledon and U.S. Open Web sites.

Managing the SP system

Each SP node is managed by a fully functional AIX operating system, providing access to the thousands of available AIX applications. In addition, the system can be partitioned into pools of nodes. For example, two nodes can work as a Lotus Domino server, while ten others process a parallel database. This configuration flexibility allows the SP system to be concurrently used for different applications, while at the same time being managed as a single system.

The SP system optimizes high availability through built-in redundancy, subsystem recovery, component error checking and correction, RAID5, external and internal disk mirroring, and hardware and software monitoring. Clusters of up to 32 SP nodes are supported by the industry's leading software product for critical application backup and availability, High Availability Cluster Multi-Processing (HACMP) for AIX. If an error such as a node failure occurs, the system can execute a recovery script that transfers the work to another node and prevents the application from going down.

Managing large systems is always a complex process. For the SP system, including attached S70 and S70 Advanced enterprise servers, a single graphical operations console that displays hardware, software, job, and user status makes system management easier. The system administrator uses this console, an RS/6000 system known as the control workstation, and the Parallel Systems Support Programs (PSSP) software product (available with the SP system) to perform management tasks, including user and password management, job accounting, and system configuration, as well as system startup/shutdown, monitoring, and partitioning.

In addition, the SP system offers a wide range of open system management software tools for operations and administration, availability, deployment, and security management. Included are the Tivoli™ and NetView® network management products, ADSM for backup and recovery, and Performance Toolbox Parallel Edition for performance monitoring.

Supported features and devices

The SP system supports a wide range of optional features and devices. Refer to the RS/6000 Facts and Features brochure and the Model S70 and S70 Advanced descriptions available on the Web at www.rs6000.ibm.com under the Hardware option.

Year 2000 readiness

When used in accordance with its associated documentation, the RS/6000 SP system is capable of correctly processing date data between the 20th and 21st centuries provided all other products used with it properly exchange date data.

Service and support

The RS/6000 SP system is backed by IBM's worldwide service and support. IBM's commitment is behind every system sold, in order to provide the highest possible customer satisfaction.

IBM customer financing provides an additional incentive. An array of attractive and flexible financing programs eases the acquisition of new technology and helps protect you from the risk of obsolescence. Financing may be available to credit-qualified customers. Rates are based on credit rating, financing terms, and other options. Other restrictions may apply.

300776

Feature	Benefits
POWER3, PowerPC and P2SC processors	<ul style="list-style-type: none"> • Deliver the processing power required for large and complex applications • Allow the flexibility to configure for optimum commercial or technical computing application performance
Open system design	<ul style="list-style-type: none"> • Supports many communication protocols, adapters, and peripherals for a flexible system
Configuration flexibility	<ul style="list-style-type: none"> • Provides various node sizes that can be intermixed on the system • Supports a range of PCI and Micro Channel adapters
Multistage packet switch	<ul style="list-style-type: none"> • Supports high-performance communications between processor nodes • Maintains point-to-point communication time independently of node location • SP Switch Router provides fastest available communication between SP systems and external networks
Scalability	<ul style="list-style-type: none"> • Makes upgrading and expansion easier and allows for transparent application growth
System partitioning	<ul style="list-style-type: none"> • Isolates application subsystems and enables concurrent use of production and test AIX systems
Single point of administrative control	<ul style="list-style-type: none"> • Makes system management easier, with less expertise and time required for most tasks
Comprehensive system management	<ul style="list-style-type: none"> • Provides the tools required to install, operate, and control an SP system • Maintains consistency with other enterprise AIX systems management tools
High availability	<ul style="list-style-type: none"> • Helps avoid costly downtime due to system outages and provides optional backup control workstation
S70 and S70 Advanced attachment	<ul style="list-style-type: none"> • Provides SP users with excellent performance for online transaction processing, enterprise resource planning, business intelligence and e-business applications • Attached server applications communicate as though on an SP node—through the SP Switch or a LAN • Allows attached servers to be easily managed from the SP control workstation
AIX operating system	<ul style="list-style-type: none"> • Provides a wealth of multiuser communications and systems management technologies • Complies with major industry standards¹ • Provides AIX binary compatibility, where most AIX Version 3.2 and Version 4 applications already running on other RS/6000 systems can run unmodified
SP solutions	
Business intelligence	<ul style="list-style-type: none"> • Provides scalable database capacity with support of leading parallel databases, including IBM DB2® UDB EEE, Oracle Enterprise Edition, and Informix Dynamic Server AD/XP • Offers proven scalable performance with leadership TPC-D results • Delivers mainframe interoperability for optimal data movement
e-business	<ul style="list-style-type: none"> • Scalable growth and single management console virtually eliminate server proliferation issues associated with addition of new servers to support the increasing number of Internet services and the complex dynamic workloads characteristic of network computing • Flexible node partitioning options permit multiple logical computing tiers for Web business; logic and database servers are supported in a single physical system while system investment is preserved
Enterprise Resource Planning	<ul style="list-style-type: none"> • Provides LAN consolidation, allowing multiple systems in a two or three tier client/server environment to be managed as a single system • Provides high availability computing using IBM's industry-leading HACMP to provide back-up, recovery, and fault-tolerant computing for mission-critical applications • Provides application consolidation among multiple nodes within a single SP system, allowing ERP and supply chain planning applications from multiple vendors to take on a single-system appearance
Server consolidation	<ul style="list-style-type: none"> • Helps reduce the complexities and costs of systems management, lowering total cost of ownership and allowing simplification of application service level management • Leverages investment in hardware and software, allowing better sharing of resources and licenses, and distributing idle cycles instead of hot spots • Provides the infrastructure that supports improved availability, data sharing and response time
Scientific and technical computing	<ul style="list-style-type: none"> • Supports batch, interactive, serial and parallel processing • Provides outstanding floating-point and integer performance • Supports industry initiatives, such as PVM, MPI, and HPF

300777

¹ AIX Version 4.3 is UNIX 98 and X/Open XPG4 branded, and is Year 2000 ready and euroready. AIX Version 4.2 is UNIX 95 and X/Open XPG4 branded.

More information

- Contact your IBM marketing representative or IBM Business Partner.
- To learn more about the RS/6000 SP, how it can be used to solve your information problems, and what services are available to assist you, visit the following Internet Web sites:
 - www.rs6000.ibm.com
 - www.rs6000.ibm.com/solutions/success
 - www.as.ibm.com/asww



Worldwide telephone numbers

IBM Asia Pacific

Australia	132-426x RS/INFO
Bangladesh	880-2-889-783
China: Beijing	10-437-6677 x CRC
Guangzhou	20-778-7268 x CRC
Shanghai	21-6280-1070 x CRC
Hong Kong	852-2825-7878
India (TATA)	080-526-9050
Indonesia	21-251-2922
Japan	0120-04-1992
Korea	02-781-7114
Malaysia	03-717-7788
New Zealand	0800-801-800
Philippines	02-819-2426
Singapore	1-800-320-1234
Sri Lanka	01-440810
Taiwan	080-011011
Thailand	02-273-4444
Vietnam: Hanoi	84-4-426316
Ho Chi Minh	84-8-241474

(IBM Europe, Middle East, or Africa, cont.)

Netherlands	31-20-513-5151
Norway	47-669999-9090
Oman	968-791360
Poland	48-22-8786-777
Portugal	351-1-7915880
Qatar	974-435395
Romania	401-6158267
Russia	7095-9402000
Saudi Arabia	966-02-600007
Slovak Republic	421-7-7806111
Slovenia	38661-1252154
South Africa	27-800-128-128
Spain	34-901-100-400
Sweden	46-20-220203
Switzerland	41-155-1225
Turkey	90-212-2800900
UK	01705-492149
Ukraine	38044-2270225
Yemen	967-1-213745

IBM Europe, Middle East, or Africa

Abu-dhabi	971-2-345165
Albania	35-542-32025
Austria	43-1-21145-2500
Bahrain	973-533995
Belgium	32-2-225-3600
Bosnia	38-771-219388
Bulgaria	3592-731076
Croatia	3851-6124500
Czech Republic	420-2-67106111
Denmark	4545-8031-6000
Dubai	971-4-313155
Egypt	202-3492533
Finland	358-9800-42680
France	33-(02)-3855-7777
FYR of Macedonia	38991-113144
Germany	49-180-55090
Greece	30-1-688-1476
Hungary	361-1654422
Ireland	353-18-5020-5205
Israel	972-177-022-3888
Italy	39-167-016338
Kuwait	965-2439900

IBM Latin America

Argentina	319-6666
Bolivia	591-2-361-555
Brazil	0800-11-1426 x317
Chile	800-216-216, or 56-2-200-60-64
Colombia	9800-17555
Costa Rica	506-223-6222
Dominican Republic	809-566-5161
Ecuador	593-432-1444 x5808
El Salvador	503-298-5011
Guatemala	502-331-5859
Honduras	504-322-309
Mexico	(5) 627-2444 x3333
Nicaragua	505-266-4141
Panama	507-263-9977
Paraguay	595-21-444-094 x210
Peru	511-349-0050
Uruguay	902-3617
Venezuela	800-33-426

IBM North America

Canada & U.S.	1-800-IBM-CALL (1-800-426-2255)
---------------	------------------------------------

© International Business Machines Corporation 1999

IBM Corporation
Marketing Communications, Servers
Route 100
Somers, New York 10589

Printed in the United States of America
2-99

All Rights Reserved

This publication was developed for products and/or services offered in the United States. IBM may not offer the products, features, or services discussed in this publication in other countries. The information may be subject to change without notice. Consult your local IBM business contact for information on the products, features, and services available in your area.

Photographs show engineering and design models. Changes may be incorporated in production models.

Copying or downloading the images contained in this document is expressly prohibited without the written consent of IBM.

This equipment is subject to FCC rules. It will comply with the appropriate FCC rules before final delivery to the buyer.

IBM hardware products are manufactured from new parts, or new and used parts. Regardless, our warranty terms apply, with implementation determined by country.

Information concerning non-IBM products was obtained from the suppliers of these products. Questions on the capabilities of the non-IBM products should be addressed with the suppliers.

IBM, AIX, DB2, Micro Channel, NetView, RS/6000 and SP are trademarks or registered trademarks of International Business Machines Corporation in the United States or other countries or both.

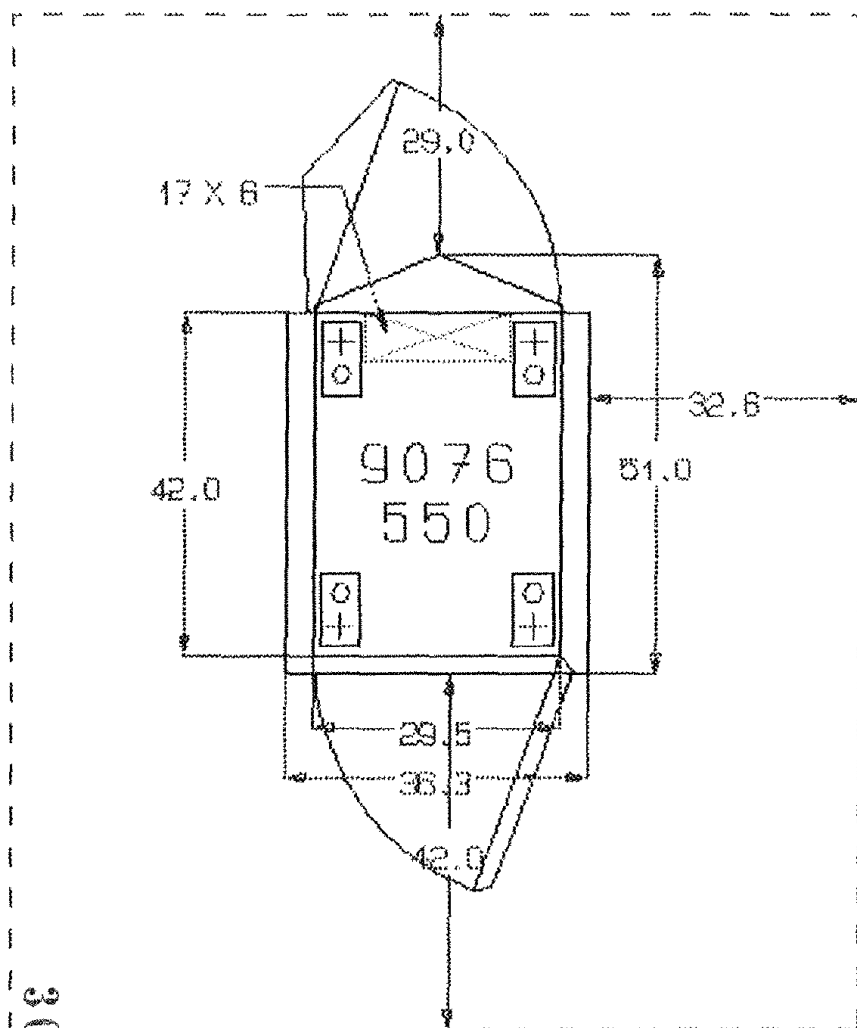
GRF is a trademark of Ascend Communications Inc. Lotus Notes and Lotus Domino are trademarks of Lotus Development Corporation. Tivoli is a trademark of Tivoli Systems, Inc. UNIX is a registered trademark of The Open Group. Other company, product, and service names may be trademarks or service marks of others.

The IBM home page on the Internet can be found at www.ibm.com

300778

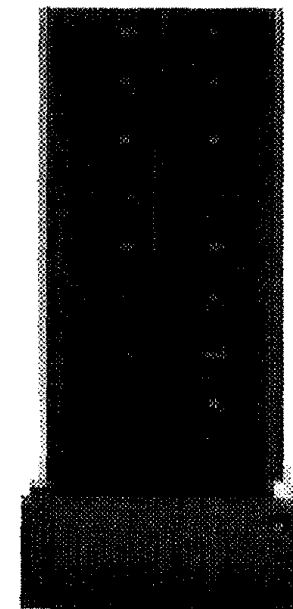


G221-7001-09



622008
300779

cbr04/01/99



SP

208V,3-Phase,4-Wire,50 or 60Amp

Qty (1) IEC-309 RS-460R9W
Receptacle w/Back Box BE-B150

Max 332Mhz Thin = 8.13KVA, 8.13KW, 27.76KBtu
Max Uni Wide Node = 5.11KVA, 5.11KW, 17.44KBtu
Max 332Mhz Wide = 7.67KVA, 7.67KW, 26.19KBtu
Max SMP High = 5.17KVA, 5.17KW, 17.67KBtu
Max Uni Thin Node = 6.71KVA, 6.71KW, 22.9KBtu

F/C 1550 = Expansion Frame
Installed = 36.3W x 51D x 75.8H
Shipping Container = 38X57X86
Max Wt. = 2000 lbs./2343 lbs.

IBM optical solutions providing low cost, high capacity, direct access storage – enhanced with IBM 5.2GB (8X) Extended Multifunction Optical Drives. The evolution continues . . .



Enhanced 3995 Optical Library C-Series for the RS/6000

Highlights

- Features IBM's first-in-the-industry extended multifunction drives that include support for Permanent WORM, Magneto-Optical (MO) Rewritable and CCW WORM optical cartridges
- Enhanced with 5.25 inch industry standard 5.2GB (8X) internal optical drives doubling the capacity of previous 3995 C-Series Optical Libraries
- Provides five models for RISC System/6000 SCSI-2 attachment to meet your individual storage capacity requirements
- Delivers from 104GB to 1341GB (1.341TB) of low cost, online optical storage capacity
- Allows configuration flexibility by providing for additional internal optical drives without loss of storage capacity
- Investment protection through continued access to information on optical media created on any previous generation 3995 Optical Library
- Combines capacity, performance, flexibility, and technology to deliver the best optical storage solution available

World class flexibility

The enhanced IBM Optical Library C-Series models provide low cost, high capacity, direct access storage to enable innovative, new business applications for your RISC System/6000 environment. Featuring IBM's 5.2GB industry-standard 5.25 inch optical drives, these enhanced 3995 Optical Library C-Series models deliver new levels of capacity at a reduced cost per megabyte.

With these optical library models, IBM has continued to enhance its innovative, first-in-the-industry extended multifunction optical drives. This technology provides support for Permanent Write-Once, Read-Many (WORM), Magneto-Optical (MO) rewritable, and Continuous Composite Write-Once (CCW) WORM using industry-standard 5.25 inch optical cartridges. All three technologies can be used within a single library, offering the most flexibility in meeting specific business requirements.

Low cost, high capacity

Five models are available, ranging from 104GB to 1341GB (1.341TB) of online storage capacity, providing the granularity required for a wide range of business solutions. Plus, the 540GB capacity model is expandable to 811GB.

With a doubling of capacity over the previous generation of optical technology the enhanced IBM 3995 SCSI models offer optical storage solutions at a significantly lower cost per megabyte.

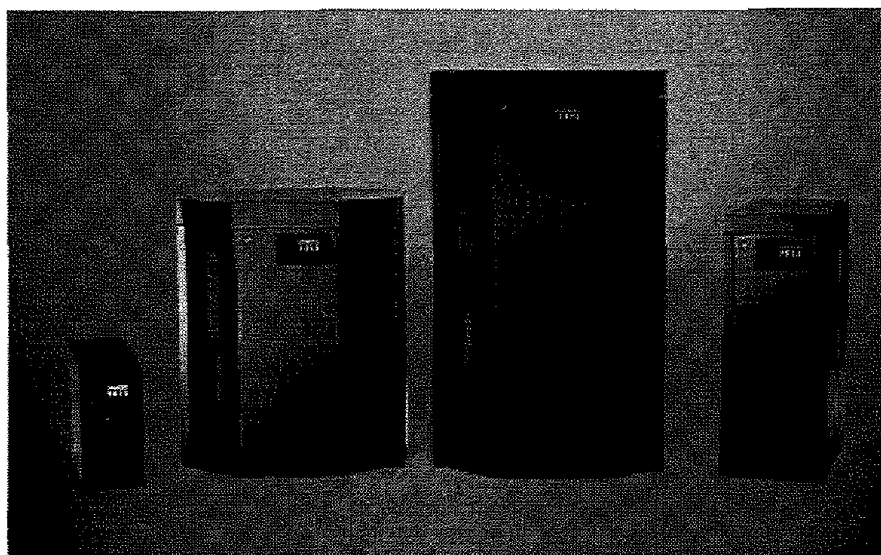
Enhanced performance

The 3995 C-Series Optical Library family has previously delivered improved optical drive data rates and faster cartridge exchange times. Most models offer a dual-gripper picker on the auto-changer and optional additional internal drives for faster performance.

Broad range of solutions

The enhanced 3995 is ideal for RS/6000 applications requiring centralized online storage with moderate performance. IBM's extended multifunction support is designed to satisfy auditing and/or legal

300780



requirements for unalterable, permanent retention of data. The 3995 also provides the flexibility of rewritable and CCW WORM optical storage.

Industry-leading software solutions for the 3995 are available from IBM, IBM Business Partners, and independent solution providers. This broad range of applications allows you to select the solution which best meets your business needs.

Software solutions need to provide the drivers and library manager for these new IBM optical libraries. Software requirements for SCSI direct-attached host systems may vary depending upon host system. Refer to your host system and application documentation for requirements.

IBM applications for the 3995 include IBM VisualInfo for AIX and OnDemand for AIX, both of which are members of IBM's Electronic Document Management Suite of solutions (EDMSuite), ADSTAR Distributed Storage Manager (ADSM) for AIX, and IBM Digital Library.

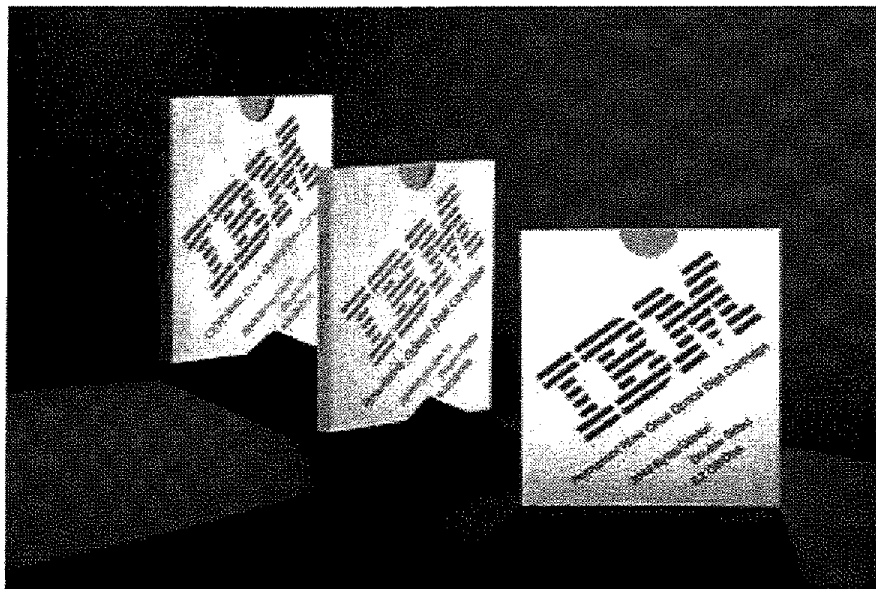
Designed for the RS/6000, POWERparallel SP and PC environments

The 3995 SCSI models are designed for attachment to servers, workstations, and personal computers which support a SCSI-2 interface, including the IBM RS/6000, POWERparallel SP, and personal computer (PC) systems.

Industry standards

The enhanced 3995 supports 5.25 inch optical cartridges which are compatible with the industry standards listed below:

- ISO/IEC DIS 15286 information technology – 130mm optical disk cartridges – capacity: 5.2GB per cartridge – for information interchange
- ISO/IEC 15486: 1998 data interchange on 130mm optical disk cartridges of type WORM (Write-Once, Read-Many) using irreversible effects – capacity: 2.6GB per cartridge
- ISO/IEC 14517: 1996 130mm optical disk cartridges for information interchange – capacity: 1.3GB per cartridge
- ISO/IEC 13549: 1993 data interchange on 130mm optical disk cartridges – capacity: 1.3GB per cartridge



Industry-Standard 5.25 inch Optical Media Cartridges with 5.2GB capacity

Optical Disk Cartridges

The following types of 5.25 inch optical disk cartridges are supported in the Enhanced 3995 C-Series RISC System/6000 attached optical libraries. Please note that the application software used with the 3995 may have media-type support restrictions.

Capacity ¹	Magneto-Optical (MO) Rewritable	Permanent WORM	CCW WORM
5.2GB (2048 Bytes/Sector)	Read/Write	Read/Write	Read/Write
4.8GB (1024 Bytes/Sector)	Read/Write	N/A	Read/Write
4.1GB (512 Bytes/Sector)	Read/Write	N/A	Read/Write
2.6GB (1024 Bytes/Sector)	Read/Write	Read/Write	Read/Write
2.3GB (512 Bytes/Sector)	Read/Write	N/A	Read/Write
1.3GB (1024 Bytes/Sector)	Read	Read	N/A
1.19GB (512 Bytes/Sector)	Read	N/A	N/A
650MB (1024 Bytes/Sector)	Read	Read	N/A
595MB (512 Bytes/Sector)	Read	N/A	N/A

- ISO/IEC 11560: 1992 information interchange on 130mm optical disk cartridges using the magneto-optical effect, for write once, read multiple functionality
- ISO/IEC 10089: 1991 130mm rewritable optical disk cartridge for information interchange.

Installation

These 3995 Optical Libraries are physically installed by IBM personnel and installation is estimated to take from 2 to 4 hours.

IBM warranty

The enhanced 3995 C-Series models are warranted with IBM's limited one year warranty. This warranty service is on-site customer service, 24 hours a day, 7 days a week.

Media

IBM optical media can be ordered via feature codes, from IBM Media or Supplies Distribution, or from authorized dealers. To order IBM media and supplies in the United States, call toll-free 1-888-IBM-MEDIA (1-888-426-6334) today.

Let us tell you more

For further information on the IBM Enhanced 3995 Optical Library C-Series models, contact your IBM representative or IBM Business Partner. In the U.S. or Canada you can also call IBM Direct: 1-800-IBM-CALL (1-800-426-2255). Internet: www.ibm.com/storage

300781

¹ Unformatted capacity

IBM Enhanced 3995 Optical Library C-Series at a glance

Model	C60	C62	C64	C66	C68
Maximum Storage Capacity (unformatted)	104GB	270GB	540GB	811GB	1341GB (1.341TB)
Maximum Cartridge Slots	20	52	104	156	258
Internal Drives	1 or 2	2	2 or 4	4 or 6	4 or 6
Performance					
Average Cartridge Move Time	2.8 seconds	2.6 seconds	2.8 seconds	2.8 seconds	3.1 seconds
Picker Type on Autochanger	Single-Gripper	Dual-Gripper	Dual-Gripper	Dual-Gripper	Dual-Gripper
Reliability					
Mean Swaps Between Failure	1,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Mean Time to Repair	30 minutes	30 minutes	30 minutes	30 minutes	30 minutes
Dimensions					
Height-mm (in.)	457 (18 in.)	991 (39 in.)	1029 (40.5 in.)	1029 (40.5 in.)	1480 (58.25 in.)
Width-mm (in.) ²	216 (8.5 in.)	355 (14 in.)	813 (32 in.)	813 (32 in.)	813 (32 in.)
Depth-mm (in.)	737 (29 in.)	737 (29 in.)	762 (30 in.)	762 (30 in.)	762 (30 in.)
Weight-kg (lbs) (without media) ³	28 (61 lb.)	69 (152 lb.)	120 (265 lb.)	125 (275 lb.)	193 (425 lb.)
Nominal Power Consumption (watts)					
Assumes Maximum Drive Configuration	80 watts (275 BTU/Hr)	90 watts (310 BTU/Hr)	140 watts (475 BTU/Hr)	180 watts (614 BTU/Hr)	180 watts (614 BTU/Hr)
Electrical All Models					
Line Voltage (V ac)	100-127 Nominal or 200-240 Nominal				
Line Frequency (Hz)	50-60				
Environmental Specifications (operating) All Models					
Temperature	10°C to 38°C (50°F to 100.4°F)				
Relative Humidity	8 to 80%				
Maximum Wet Bulb Temperature	25.8°C (78.4°F)				
Hardware Interface⁴					
Single-Ended SCSI Interface:	SCSI-2 High-performance External Controller (#2410 or #2831) or SCSI-2 Fast/Wide Adapter/A (#2408, #2412, #2413, #2416, #6207, or #6209)				
Differential SCSI Interface:	SCSI-2 Differential High-performance External Controller (#2420) or SCSI-2 Differential Fast/Wide Adapter/A (#2409, #2414, #2413, #2416, #6207, or #6209)				
HACMP SCSI Connection	A quantity of two (2) each of FC 7217 or FC 7218 are required for HACMP implementation				
Software⁵					
An application that provides optical library management functions and drivers for the C6X Libraries is required and needs to be acquired separately. The selected application may have it's own prerequisites and/or dependencies.					
Year 2000 Year 2000 Ready ⁶					
Warranty IBM limited one year warranty					
Upgrade Options					
3995 C-Series Models to Enhanced 3995 C-Series models w/5.2GB	Yes				
Model C64 to Model C66 field upgrades available	Yes				

Optical Drive Performance

Rotation Speed	3000 RPM
Average Seek – MO Rewritable or CCW	25 ms
Average Seek – Permanent WORM	120 ms
Average Latency	10 ms
Average Load Time (including spin-up to ready)	5.5 sec
Average Unload Time (including spin-down)	3 sec

Data Transfer Rate

Sustained	2.3 to 4.6MB/sec
Burst (synchronous)	10MB/sec
Burst (asynchronous)	6MB/sec

Buffer Memory Capacity

Reliability	
Mean Loads Between Failure (MLBF)	1,000,000
Mean Time Between Failure (MTBF)	100,000 hours

² The width at the base, with stabilizers is 464mm (18.25 in.) for Model C62.

³ The actual weight of the optical library will vary depending on the number of internal optical drives.

⁴ These models, with a single-ended SCSI-2 interface, are not supported on the 900-series POWERserver. A SCSI-2 differential interface is required. Some of the RS/6000 SCSI features may no longer be available.

⁵ RISC System/6000 or application software may require an AIX/6000 selective enhancement installation. These 3995 Models do not include device drivers or Optical Library Management Software. These need to be obtained separately. See you IBM Representative for a list of IBM and non-IBM software that support these enhanced 3995 C-Series Optical Libraries.

⁶ When used in accordance with its associated documentation, it is capable of correctly processing, providing, and/or receiving date data within and between the 20th and 21st centuries, provided all other products (for example, software, hardware, and firmware) used with the product properly exchange accurate date data with it.

300782



© International Business Machines Corporation 1998

IBM Storage Systems Division
Department ATX
9000 S. Rita Road
Tucson, AZ 85744

Printed in the United States of America
08-88
All Rights Reserved

Performance data herein was obtained, and failure rate data was projected based upon a specified process, in a controlled test environment. Actual results obtained may vary significantly.

References in this publication to IBM products, programs, or services do not imply that IBM intends to make them available outside the United States.

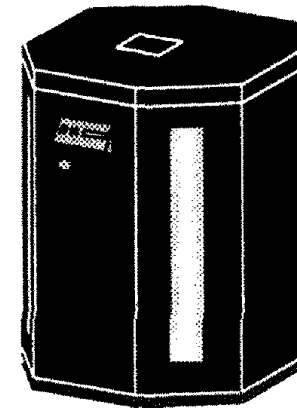
The following terms are trademarks or registered trademarks of the IBM Corporation in the United States, other countries, or both: IBM, POWERparallel, SPRS/6000 and AIX. Windows and Windows NT are registered trademarks of Microsoft Corporation. Other company, product and service names may be trademarks or registered trademarks of their respective companies.

IBM hardware products are manufactured from new parts, or new and used parts. In some cases, the hardware product may not be new and may have been previously installed. Regardless, our warranty terms apply.

300783



G225-6809-00



3995 Optical Disk

120V or 208V, 15Amp, 1-Phase, 3-Wire

Qty (1) of either:

STD (1) NEMA 5-15R (120V)

F/C 9908 = NEMA 6-15R (208V)

F/C 9909 = R&S 3913U-2 (Inline Connector @208V)
or R&S 3943U-2 (Receptacle @208V)

Max = .45KVA, .35KW, 1.2KBtu

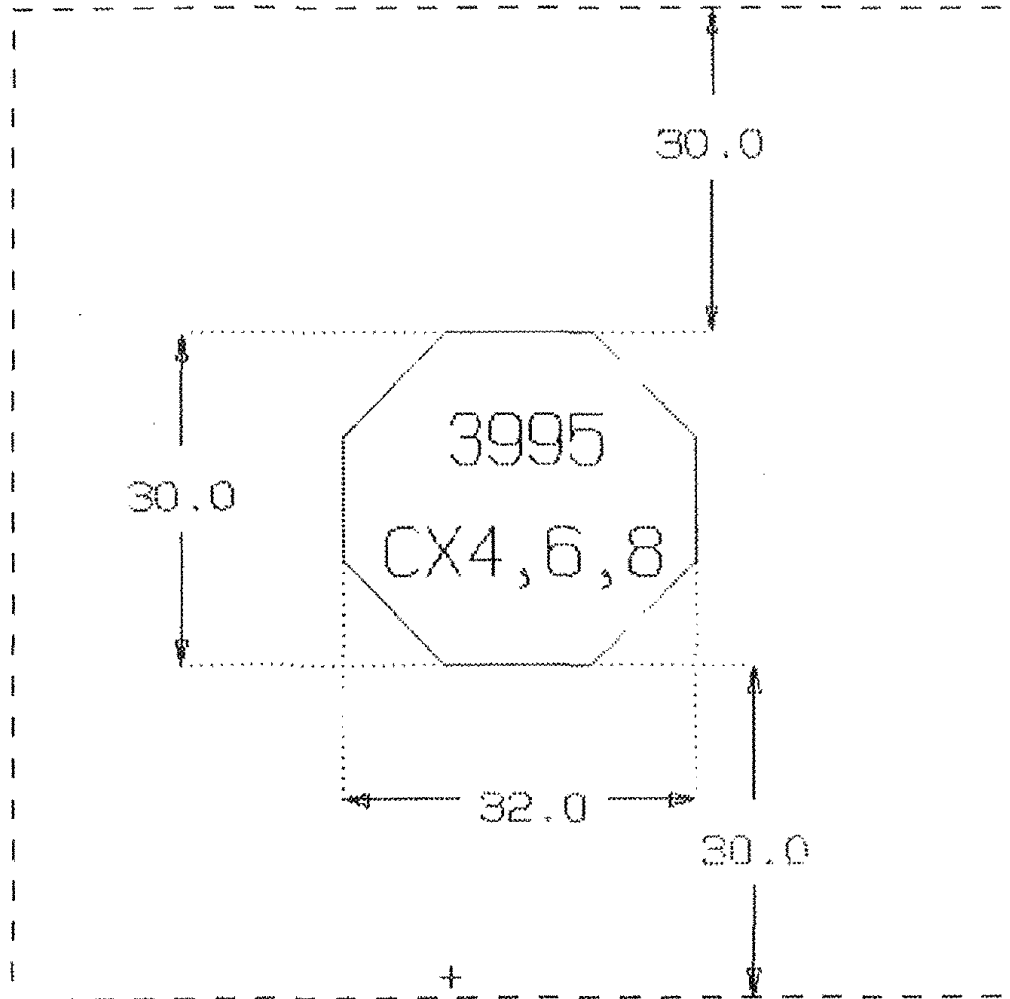
Max Wt. = 446 lbs.

Library Controller:

Max = .28KVA, .17KW, .58KBtu

Max Wt. = 45lb.

6' Powercord to 3995



cbr03/10/99

300784

*High-performance IBM 7133 Serial Disk System
for UNIX and Windows NT servers*



IBM 7133 Serial Disk System Advanced Models D40 and T40

Highlights

Provides outstanding disk storage performance with advanced SSA bandwidth of 160 MB/sec

Features high-performance 36.4 GB, 18.2 GB, 9.1 GB, and 4.5 GB IBM disk drives (7,200 and 10,020 RPM)

Provides high capacity—up to 582 GB per tower or drawer and 3.5 TB per host adapter

Enables disk sharing through simultaneous attachment of multiple UNIX and Windows NT** hosts to the IBM 7133 Serial Disk System**

Provides high availability with redundant data paths, redundant cooling units, and two power supplies

Facilitates remote mirroring—up to 10 km connection distances—with the Advanced SSA Optical Extender

Simplifies storage management when used with the IBM StorWatch* Serial Storage Expert

IBM 7133 Serial Disk System Advanced Models D40 and T40

The IBM 7133 Serial Disk System Advanced Models D40 and T40 provide highly available storage for UNIX and Windows NT servers. By implementing a powerful industry-standard serial technology, the 7133 Advanced Models D40 and T40 provide outstanding performance, availability, and attachability.

The rack-mountable 7133 Advanced Model D40 drawer is designed for integration into a supported 19-inch rack. The 7133 Advanced Model T40 is a free-standing desk-side tower unit.

Both 7133 Advanced Models can be populated with 36.4 GB, 18.2 GB, 9.1 GB, and 4.5 GB IBM Ultrastar* disk drives. Drive capacities can be intermixed, providing the flexibility to build storage capacity from gigabytes to terabytes. The 7133 Advanced Models can be intermixed in the same loop with other models of the 7133 (Models 010, 020, 500, 600) as well as with the 7131-405.

SSA multi-host attachment

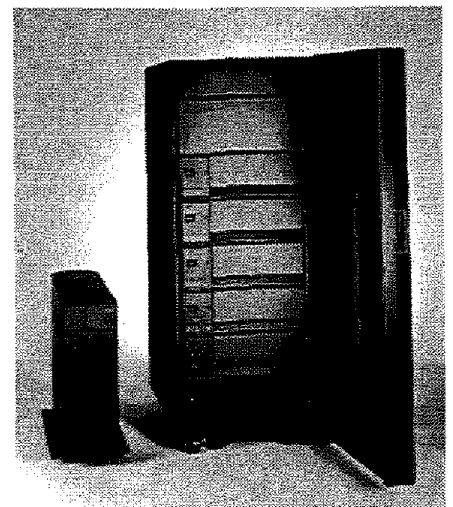
Capable of connecting and sharing storage with multiple UNIX and Windows NT hosts, the 7133 Serial Disk System is ideally suited for clustered server environments. Servers can benefit from IBM Serial Storage Architecture (SSA) technology via appropriate SSA adapters or attachments.

High performance

The 7133 Advanced Models provide outstanding performance for multiple, concurrent, full-duplex I/O operations. Unlike SCSI bus configurations, SSA devices such as the 7133 Serial Disk System are configured in loops and allow multiple concurrent operations to occur in separate sections of these loops. This results in high overall throughput and superior utilization of the 160 MB/sec bandwidth of the 7133 Advanced Models. This SSA capability is referred to as spatial reuse.

High availability

IBM SSA technology features significant availability advantages over SCSI-based technology. If a cable failure occurs on the loop, the SSA adapter automatically continues accessing disks



300785

*IBM 7133 Serial Disk System Advanced
Models D40 and T40*

through an alternate path. If a disk failure occurs, the hot-swappable drives can be removed and replaced without disrupting the communication between the adapter and other disks on the loop.

To further increase availability, the 7133 Advanced Models monitor and provide detailed information on the status of power, cooling, and disk drives.

With the Advanced SSA Optical Extender, distances up to 10 km are supported between 7133 Advanced Models and advanced SSA 160 MB/sec adapters. In addition, this optical extender supports distances up to 2.4 km between other 7133 models and SSA adapters².

easily, because SSA is compatible with the SCSI command set. The 7133 Serial Disk System is a key building block in the IBM Seascope[®] architecture, a blueprint for innovative storage solutions.

To facilitate server consolidation, IBM supports the relocation of existing 7133 Advanced Model D40s into the IBM Versatile Storage Server^{*}.

For more information

For more information, contact your IBM representative or IBM Business Partner. Or visit www.ibm.com/storage/disk.

Investment protection

The 7133 Serial Disk System helps protect investments in existing equipment while providing a clear path for growth. Existing SCSI-based applications should migrate



www.ibm.com/storage

© International Business Machines Corporation 1999

IBM Storage Systems Division
5600 Cottle Road
San Jose, CA 95193

Produced in the United States
5-99

All rights reserved

² The IBM 7131-405 does not support the use of IBM optical extenders.

^{*} IBM is a registered trademark and Seascope, StorWatch, Ultrastar, and Versatile Storage Server are trademarks of International Business Machines Corporation.

^{**} Windows NT is a registered trademark of Microsoft Corporation. Intel is a registered trademark of Intel Corporation. UNIX is a registered trademark licensed exclusively by X/Open Company Limited.

Other product names are the trademarks or registered trademarks of their respective companies.

IBM hardware products are manufactured from new parts, or new and used parts. In some cases, the hardware product may not be new and may have been previously installed. Regardless, IBM warranty terms apply.

References in this publication to IBM products, programs, or services do not imply that IBM intends to make them available in all countries in which IBM operates.

Product data is accurate as of initial publication and is subject to change without notice.

IBM 7133 Serial Disk System Advanced Models D40 and T40 at a glance

Models	Rack-mountable D40/Deskside T40
4.5 GB disks (7,200 RPM)	18.0 to 72.0 GB
91 GB disks (10,020 and 7,200 RPM)	36.4 to 145.6 GB
18.2 GB disks (10,020 and 7,200 RPM)	72.8 to 291.2 GB
36.4 GB disks (7,200 RPM)	145.6 to 582.4 GB
Capacity (per adapter)	Up to 96 drives (48/loop)

Physical specifications

Dimensions (H, W, D)	D40: 171 mm x 444 mm x 737 mm T40: 610 mm x 210 mm x 861 mm
Weight (maximum configuration)	D40: 118.0 lb (53.5 kg) T40: 168.0 lb (76.2 kg)

Operating environment

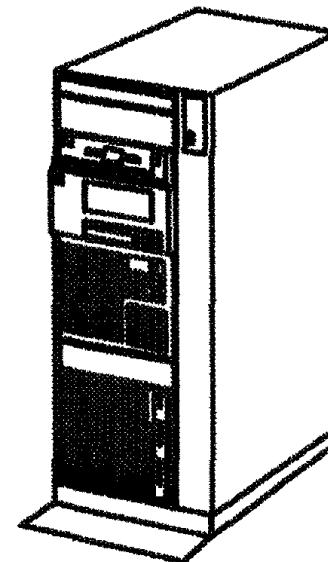
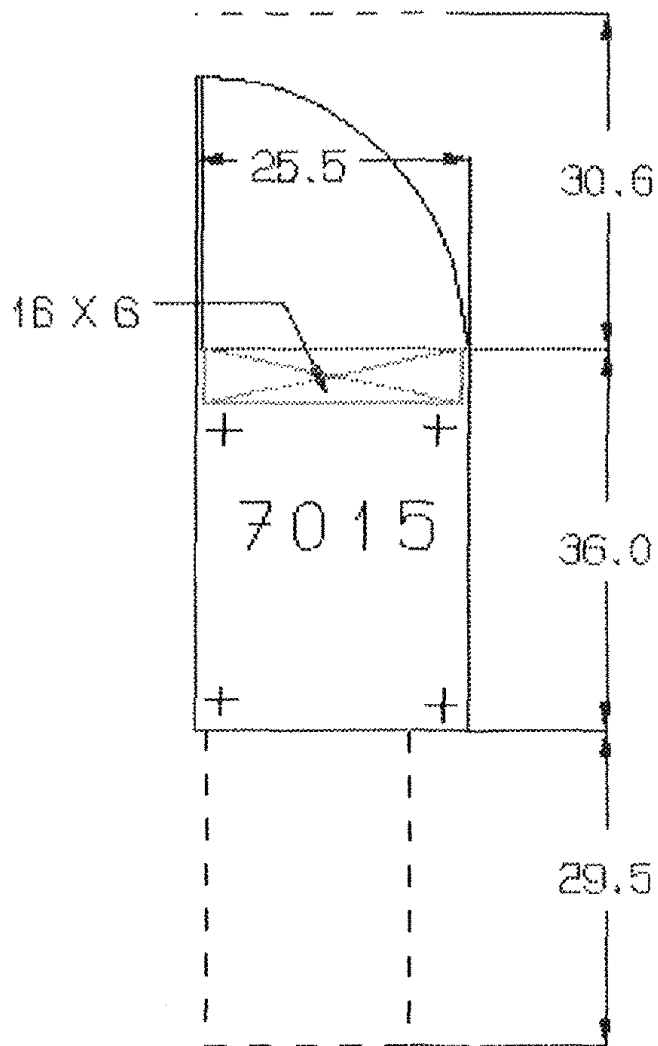
Temperature	50° to 104° F (10° to 40° C)
Relative humidity	8 to 80%
Maximum wet bulb	80.6° F (27.0° C)
Power requirements	20 to 400 watts
Warranty	One year limited

Supported systems¹

Selected UNIX and Intel[™]-based servers

¹ For a current listing of supported product models, visit www.ibm.com/storage/7133attach, or contact your IBM representative or IBM Business Partner.

300786



7015-R00

208V, 30Amp, 1-Phase, w/3-wire

Qty (1 or 2) per 7015, NEMA L6-30R

F/C 9171 = Base PDU 14' Pwrcord

F/C 6171 = Addn PDU 14' Pwrcord

F/C 9801 = RS-3933 Watertight

note: 7133-D40 need dual PDU

Max 7015 = 4.0KVA, 3.6KW, 12.28KBtu, 286lbs.

Max 7026-H50 = .6KVA, .43KW, 1.98KBtu, 195lbs.

Max 7133-020 Dwr = .657KVA, .61KW, 2.07KBtu, 110lbs.

Max 7133-D40 Dwr = .483KVA, .4KW, 1.365KBtu, 118lbs.

Max 3570-B12 Tape = .13KVA, .13KW, .444KBtu, 63.9lbs.

Max 3590-B11 Tape = .3KVA, .3KW, 1.02KBtu, 109lbs.

cbr04/01/99

300787

Base w/Shipping Pallet = 46" x 32.5", 349lbs.

The storage you need, the reliability you demand.



Removable Media Product Guide



The Storage you need...

The Reliability you demand.

The Heart of Every Business

Information is the heart of every business, and the amount of information each business needs continues to grow at a rapid pace.

Since information is a key corporate asset, it is imperative that it be stored, backed up and older data archived on extremely reliable media.

IBM offers a complete line of quality data storage products and media to support applications ranging from PC desktops to enterprise-wide mainframe libraries.

IBM Leadership in Data Storage

IBM has been in the media business for decades beginning with the punched card. From cards to tape, disks, and today to CDs, IBM has been a leader in storage technologies. And all IBM media products reflect the high standards of a leader in media and storage-drive technology.

As a Total Storage Solution Provider, IBM developed many of the storage technologies used today—and we continue to set media standards.

IBM Quality

The reliability of IBM storage products is no accident. We take great pains to protect the information you entrust to our media.

All IBM removable media are precision-manufactured to tight specifications. Then each is certified before shipment to assure consistent high quality and reliability. And IBM media is warrantied.

Designed for IBM drives

IBM storage media products and their respective IBM drives go together perfectly. Right from the start, they're designed to complement one another. So you can enjoy IBM reliability each and every time you use them.

The IBM Value Proposition

IBM quality, support and performance certification combine to make IBM media a value leader in storage products.

Sales and Support

You can get assistance, answers to product-related questions, or arrange for a warranty product replacement—with just one call. To locate your nearest source for ordering, call the following numbers worldwide:

- 1-888-IBM-Media (1-888-426-6334) toll free in the United States and Canada
- 1-972-881-0733 (x7530) in Latin America
- 31-433-502-756 in Europe, Middle East, and Africa
- 1-300-655-333 in Australia and New Zealand
- 3-3808-8486 in Japan

For additional product information and country-specific phone numbers, visit: www.ibm.com/storage/media

300789

1/2" Tape Products

3590 Magstar High Performance Tape Cartridges

Highlights:

- 128 track, serpentine, longitudinal recording technique for improved capacity, performance and reliability
- For use with IBM Magstar 3590 drives and IBM Magstar 3494 tape libraries
- 10 GB native capacity offering up to 30 GB with compression
- Custom labeling and initialization services available

Specifications:

Capacity:
Native 10 GB
Compressed up to 30 GB

Length (ft/m): 1050/320

Part Number:

3590 Magstar
Tape Cartridge 05H4434
"J-Less" 05H3302

Related Products:

Cleaning Cartridge 05H3917
Cartridge Magazine 39F4762
Leader Block Repair Kit 05H4868
Leader Blocks-Blue (10 pieces) 05H4869



3570 Magstar MP Linear Tape Cartridges

Highlights:

- Unique midpoint load mechanism enables system to locate data faster
- Extremely durable cartridge case protects the tape from the physical environment
- Self-contained tape path improves data reliability and extends tape life
- Almost instantaneous head/tape contact at load time shortens data retrieval process
- 5 GB native capacity offering up to 15 GB capacity with compression
- Custom labeling and initialization services available

Specifications:

Capacity:
Native 5 GB
Compressed up to 15 GB

Length (ft/m): 548/167

Part Numbers: 05H2462 "B"
08L6187 "C"

Related Products:

Cleaning Cartridge 05H2463
Cartridge Magazine 49G6598



3490E Enhanced Capacity Tape Cartridges

Highlights:

- 36-track serpentine longitudinal recording technique
- 800 MB native capacity offering up to 2.4 GB capacity with compression
- Improved capacity, performance, and reliability
- Custom labeling and initialization services available

Specifications:

Capacity:
Native 800 MB
Compressed up to 2.4 GB

Length (ft/m): 1100/335

Part Number:

3490E Tape Cartridge 09G4494

Related Products:

Cleaning Cartridge 05H3917
Leader Block Repair Kit 05H4868
Leader Blocks-Black (10 pieces) 4780624



3480 Tape Cartridges

Highlights:

- 18-track longitudinal recording technique
- Custom labeling and initialization services available

Specifications:

Capacity: 200 MB
Length (ft/m): 550/167

Part Number:

3480 Tape Cartridge 4479753

Related Products:

Conductive Cleaner 05H3917
Cleaning Cartridge 4780527
Leader Block Repair Kit 05H4868
Leader Blocks-Black (10 pieces) 4780624



300790

DLT Tape Products

Highlights:

- Two visible reel-lock indicators show open or damaged locks, to protect valuable drives
- Cartridge labeling area, with labels included
- Backward-compatible with earlier DLT 4000 and DLT 7000 drives (IBM DLTape IV)

Specifications:

Capacity:

DLTape IIIXT: 15 GB (up to 30 GB with compression)
DLTape IV: 35 GB (up to 70 GB with compression)

Length: 1800 feet

Part Number:

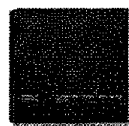
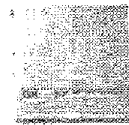
DLTape IIIXT: 59H3411
DLTape IV: 59H3040

Supported Drives:

DLTape IIIXT: DLT 2000 XT, 4000, 7000
DLTape IV: DLT 4000, 7000

Related Products:

DLT Cleaning Cartridge 59H3092



8mm Tape Products

Highlights:

- Precision-matched tape reels and guaranteed reel-heights for smooth, reliable operation
- Proprietary hub lock reduces tape positioning errors, assuring data integrity
- Laser-optical tape alignment during manufacturing for tape-path reliability
- Improved media coating for cleaner operation and reduced head friction
- Ruggedized tape substrate tested to withstand over 2,000 passes against heads
- Industry-standard DDS media recognition for data-grade tapes

Specifications:

Capacity (Type/length):

Native
Metal Particle/112m 2.3 GB
Metal Particle/160m 7.0 GB
AME/170M 20 GB
AME/22.5M 2.5 GB
Compressed
Metal Particle/112m up to 4.6 GB
Metal Particle/160m up to 15 GB
AME/170M up to 40 GB
AME/22.5M up to 5 GB

Part Number:

Metal Particle/112m 21F8575
Metal Particle/160m 87G1603
AME/170M 59H2678
AME/22.5M 59H2671

Related Products:

Cleaning Cartridges:
AME 59H2898
Superior 16G8467
Library Magazine-10 cell 86G9310



4mm Tape Products

Highlights:

- Precision-matched tape reels and guaranteed reel-heights for smooth, reliable operation
- Proprietary hub lock reduces tape positioning errors, assuring data integrity
- Laser-optical tape alignment during manufacture for tape-path reliability
- Improved media coating for cleaner operation and reduced head friction
- Ruggedized tape substrate tested to withstand over 2,000 passes against heads
- Industry-standard DDS media recognition for data-grade tapes

Specifications:

Capacity:

DDS1: 2 GB
DDS2: 4 GB
DDS3: 12 GB

Length (m):

DDS1: 90.0
DDS2: 120.0
DDS3: 125.0

Part Number:

DDS1 21F8754
DDS2 8191151
DDS3 59H3465

Related Products:

Cleaning Cartridges
4mm 21F8763
4mm Universal 59H3090
Library Magazine-14 cell 44H3590



300791

removable

CD-R and PD Optical Products

CD-R

Highlights:

- Gold surface provides highest reflectivity and reliability for excellence in data and audio recordings
- Patented dye ensures extreme durability, plus heat, humidity and light resistance
- Scratch-resistant surface protects data
- Lowest BLER ratios of a CD-R technology

Specifications:

Capacity: 650 MB/74 minutes

Part Number:
Jewel Case-5 pack 59H3703
Bulk-600 pack 59H3704



PD Optical

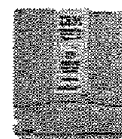
Highlights:

- Industry-standard PC Optical format stores up to 650MB of data
- Polycarbonate disk and metal hub meet rigid specifications for alignment and runout

Specifications:

Capacity: 650 MB

Part Number:
Windows NT format 59H3112
PC-DOS format 59H3111



5.25" and 3.5" Optical Products

Highlights:

- Provide quick access to vital information
- Compact, economical and ideally suited for long-term storage
- No physical contact helps provide data integrity
- Ablative technology helps prevent removal or alteration of data
- Permanent WORM is designed to satisfy auditing and/or legal requirements for unalterable retention of data

5.25" Optical

Specifications:

Capacity:

Rewritable

512 bytes/sector 2X	1.2 GB
512 bytes/sector 4X	2.3 GB
512 bytes/sector 8X	4.1 GB
1024 bytes/sector 2X	1.3 GB
1024 bytes/sector 4X	2.6 GB
1024 bytes/sector 8X	4.8 GB
2048 bytes/sector 8X	5.2 GB

CCW WORM

512 bytes/sector 4X	2.3 GB
512 bytes/sector 8X	4.1 GB
1024 bytes/sector 4X	2.6 GB
1024 bytes/sector 8X	4.8 GB
2048 bytes/sector 8X	5.2 GB

Ablative WORM

1024 bytes/sector 1X	652 MB
1024 bytes/sector 2X	1.3 GB

Permanent WORM

1024 bytes/sector 4X	2.6 GB
2048 bytes/sector 8X	5.2 GB

Part Number:

Rewritable

512 bytes/sector 2X	09G7339
512 bytes/sector 4X	09G7344
512 bytes/sector 8X	59H4784
1024 bytes/sector 2X	99F8494
1024 bytes/sector 4X	99F8495
1024 bytes/sector 8X	59H4785
2048 bytes/sector 8X	59H4786



CCW WORM

512 bytes/sector 4X	99F8496
512 bytes/sector 8X	59H4787
1024 bytes/sector 4X	99F8497
1024 bytes/sector 8X	59H4788
2048 bytes/sector 8X	59H4789

Ablative WORM

1024 bytes/sector 1X	65F6951
1024 bytes/sector 2X	09G7343

Permanent WORM

1024 bytes/sector 4X	99F8517
2048 bytes/sector 8X	59H4791

Related Products:

Library Media Cleaning Kit	
3.5"/5.25"	49G7408
5.25" Lens/Prism Cleaner	62G0521



3.5" Optical

Specifications:

Capacity:

Rewritable	128 MB (1X)
DOS Formatted	230 MB (2X)

Part Number:

Rewritable	62G1056
DOS Formatted	05H2214

Related Products:

Library Media Cleaning Kit	
3.5"/5.25"	49G7408
3.5" Lens/Prism Cleaner	66G7444

300792

media

QIC Products

Highlights:

- Advanced mirror optics assure BOT and EOT recognition
- Advanced media-binder process delivers ultra-clean operation
- Stringent wheel-pin perpendicularity specification for smooth operation and fewer re-reads
- Proprietary belt design provides steady tension
- Special stippled base plate design provides exceptional rigidity and a stable tape path
- Cartridge cover helps shield against static discharge and airborne debris
- Durastat on drive rollers dissipates static
- Trouble-free access door design
- Multi-step media cleaning during manufacturing for exceptional reliability

QIC 3.5" Data Cartridges

Specifications:

IBM Tape/QIC Compatibility:

DC2120 Mini	QIC-80
MC3000XL	QIC-40-MC

Capacity:

DC2120 Mini	120 MB
MC3000XL	340-1000 MB

Length (ft/m):

DC2120 Mini	3075/93.7
MC3000XL	400/122

Recording Density (FTPI/FTPMM):

DC2120 Mini	15,000/579
MC3000XL	50,800/2000

Part Number:

DC2120 Mini	16G8460
MC3000XL	87G1618

Related Products:

Mini QIC 3.5"	
Cleaning Cartridge	
(30 uses)	16G8583



QIC 5.25" Data Cartridges

Specifications:

Capacity:

DC6150	150 MB
DC6525	525 MB
DC9120	1.2 GB
DC9250	2.5 GB
SLR5	4 GB
MLR	13 GB
MLR1	16 GB
MLR3	25 GB
NS20	10 GB

Length (ft/m):

DC6150	620/189
DC6525	1020/311
DC9120	950/290
DC9250	1200/366
SLR5	1500/458
MLR	1200/366
MLR1	1500/458
MLR3	1515/462
NS20	740/226

Recording Density (FTPI/FTPMM):

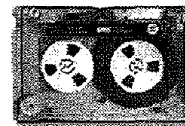
DC6150	12500/492
DC6525	20000/787
DC9120	45000/1772
DC9250	50800/2000
SLR5	62000/2441
MLR	50800/2000
MLR1	50800/200
MLR3	77343/3045
NS20	79800/3142

Part Number:

DC6150	21F8578
DC6525	21F8697
DC9120	21F8730
DC9250	16G8436
SLR5	59H3660
MLR	16G8574
MLR1	59H4175
MLR3	59H4128
NS20	59H4364

Related Products:

QIC 5.25" Wet Process	
Cleaning Cartridge	16G8572
QIC 5.25" MLR3	
Dry Cleaning Agent	
(50 uses)	59H4366



reliable

300793

Disk/Diskette Products

High Capacity Floppy Disk

Highlights:

- Newly developed ultra-thin double-layer coating technology enables this 'HiFD' to hold 200 MB of data
- Using high recording density and 3600 RPM, the HiFD provides a maximum transfer rate of up to 3.6 MB per second
- A soft-action head-loading mechanism and new shutter design enable superior reliability

Specifications:

Capacity: 200 MB

Part Number:

Single pack 59H4444
3-pack 59H4581



3.5" Diskettes

Highlights:

- Cost-effective, reusable and durable storage
- Double-sided, high density offering

Specifications:

Capacity:

DS/HD 1.44 MB

Part Number:

DS/HD 10-pack 34L2611



8" Diskettes

Highlights:

- Single and double density offerings
- High quality media for legacy hardware

Specifications:

Part Number:

SS/SD 10-pack 2305830
SS/SD DP - 10-pack 2736700
1-OS/6 10-pack 1669959
DS/DD DW - 10-pack 4498959
DS/DD 8 sector 10-pack 1669045
DS/DD 15 sector 10-pack 1669044
DS/DD 26 sector 10-pack 1766872



support & Quality
Performance

300794



www.ibm.com/storage/media

© International Business Machines Corporation 1999

IBM Storage Systems Division
Removable Media Storage Solutions
9000 S. Rita Road
Tucson, AZ 85744

Produced in the United States
4-99
All rights reserved

* IBM is a registered trademark and Magstar is a trademark of International Business Machines Corporation.

** Windows NT is a registered trademark of Microsoft Corporation. DLT is a trademark of Quantum Corporation. HiFD is a trademark of Sony Corporation.

Other product names are trademarks or registered trademarks of their respective companies.

References in this publication to IBM products, programs, or services do not imply that IBM intends to make them available in all countries in which IBM operates.

Product description data represents design objectives and is provided for comparative purposes; actual results may vary depending on a variety of factors. Product claims are true as of the date of the first printing. This product data does not constitute a warranty. Questions regarding IBM warranty terms or the methodology used to derive this data should be referred to an IBM representative. Data subject to change without notice.

Photography depicts design models. Actual products may show slight variations.

Removable media products and part numbers are subject to change or withdraw at any time. Please consult your IBM sales representative or reseller for the latest available products.

300795

Attachmate

PRODUCTS

Solutions

Products

Consulting

Support

Y2K

Partners

Press

About Us

Cool Jobs

site map

search

home

KEA!® 420 and KEA! 340 version 5.1

The premier solution for managed, cost-saving access to OpenVMS™ and UNIX® systems.

Related Topics :

- Product Profile
- Product Evaluation
- Solution Profile
- Reviewer's Guide
- Newsletter

Questions about KEA!? Contact us [here](#).

With Attachmate's KEA! family, featuring KEA! 420 for text applications and KEA! 340 for text and graphics applications, your organization gains intuitive, managed access to the power of OpenVMS and UNIX computing environments. Featuring extensive built-in support for industry standards, KEA! efficiently leverages host, network and desktop resources already existing in most organizations. Plus, KEA! 5.1 is the first version of KEA! tested to be compliant with [Attachmate's Year 2000 Compliance Statement](#), which means you can devote resources to more pressing Y2K issues free of concerns about how the date change will affect your host access software.

New in this release:

- Tested Year 2000-ready
- SCO ANSI terminal emulation support
- Schedule macros to run automatically with the KEA! Macro Scheduler
- Save file transfer lists for future use with the KEA! File Shuttle Utility
- Automatic default Telnet designation for your web browser
- Compatible with Microsoft® Windows® Terminal Server, and Citrix WinFrame 1.7 and MetaFrame
- Complete set of TCP/IP utilities
 - FTP client and server
 - Integrated LPR/LPD
 - PING
 - Finger
 - Traceroute
 - Whois
- LK450, LK411, LK461 and PowerStation keyboard drivers for Windows NT

[Screenshot #1](#) [Screenshot #2](#)

Product Highlights

Configuration and installation made easy.
Configuring and distributing KEA! is simple and straightforward. Its administrative install feature centralizes control of configuration and distribution at the fingertips of network administrators - saving them costly and time-consuming trips to end-user desktops.

Customizable toolbars and menus.
KEA!'s toolbars and menus lend themselves to nearly limitless customization. Create custom toolbar icons. Add a new menu to the menu bar, or add a command to an existing menu. Even add a submenu to an existing menu.

SmartPads.
Beyond toolbars and menus, SmartPads offer another one-click way to interact

Sept 8, 1999

300796

with the host application. Displaying pre-defined buttons, SmartPads can appear either on the status bar or in an independent window. SmartPad buttons are fully configurable with respect to width, appearance and location.

OLE Automation.

Full OLE 2.0 compliance means that programmatic control can be exercised over KEA!'s discrete objects from within OLE Automation-enabled development environments like Visual Basic®. This makes for rapid development of custom applications that incorporate the built-in functionality of KEA! objects.

Front-ending with APIs.

Another way in which KEA! simplifies front-ending is through the support of numerous APIs including HLLAPI, WinHLLAPI and Attachmate's Enterprise Access Library™, which comprises over sixty communications interface function calls.

KEA! Macro Language.

The KEA! macro language makes it unnecessary for users to memorize and manually enter complex sequences of commands. Instead, those commands can be incorporated into a single macro assigned to a key, menu command, toolbar button or SmartPad button for one-click execution. Schedule KEA! macros to run automatically at off-peak times - whether on a daily, weekly, or monthly basis - with the KEA! Macro Scheduler.

File transfers easier than ever.

KEA!'s intuitive File Shuttle Utility makes transferring numerous files in either direction easier than ever. And now, you can save file transfer lists for convenient reuse in future sessions.

Multi-session support.

Connect to multiple hosts, multiple applications on the same host or multiple applications across multiple hosts - all at the same time. From KEA!'s convenient New Session Wizard, each session can be configured differently with respect to connection, session, and file transfer types.

Automatic default Telnet designation for your web browser.

During installation, you are given the option to let KEA! automatically designate itself as the default Telnet application for your browser. As a result, whenever you visit a web page requiring Telnet capabilities, your web browser launches KEA! automatically.

Compatible with Microsoft Windows Terminal Server.

KEA! is compatible with Microsoft Windows Terminal Server, Citrix WinFrame 1.7 and MetaFrame. Clients supported by these multiuser systems can access KEA! on the server and exploit all its features, even though it's not installed locally.

TCP/IP support featuring integrated FTP client and server.

KEA! includes a complete set TCP/IP utilities for the 32-bit Windows environment: FTP client and server, integrated LPR/LPD, as well as PING, finger, traceroute, and whois.

Lowering overhead with centralized management.

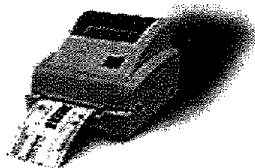
The centralized management facilities in KEA! help reduce the administrative overhead of costly, time-consuming trips to end-user desktops. With the included KEA! Management Console, configuration, distribution, installation, upgrades, inventory and usage and license metering of KEA! clients can be performed from a centrally located, easy-to-use graphical interface.

Attachmate Corporation PO Box 90026 Bellevue, WA 98009
©1999 Attachmate Corporation. All Rights Reserved. 1-800-426-6283
[Legal Notices](#) [Privacy Policy](#) [Contact Us](#)

300797



HOME : PRINTERS

**T402**CLICK ON PRINTER
FOR A LARGER VIEW

Data Sheets:

[HTML](#)[English PDF](#)

The enhanced features and print capabilities of the Zebra T402 provide true flexibility to novice or experienced users alike seeking a compact, quick, easy and affordable way to create bar code labels.

Reliability: The Zebra Advantage

For nearly 30 years, every Zebra printer has been designed, engineered and constructed with quality and durability in mind. This ongoing dedication to excellence is how we've earned our reputation for proven reliability.

Your Zebra printer will deliver the results you expect: enhanced productivity, minimal maintenance, and a lower cost of ownership. We even back up every product with a 12-month printer warranty and 6-month printhead warranty, with no limitation on inches printed.

Flexibility

- State-of-the-art technology features (e.g. flash memory, increased DRAM, standard scalable fonts) provide users with a new standard of print capability to handle more complex labeling requirements.
- Capable of printing on a variety of media - including fanfold, perforated, tag-stock, and notched - allows a wide range of printing applications.
- Flexible user options (such as peel, reflective sensor, etc) enable the T402 to be customized to your application needs.

Compact Size

- Compact size facilitates integration into work environments with space constraints.
- Lightweight and transportable for use in one or more locations.

Quick / Easy Installation

- Ready-to-use, right out-of-the-box.
- Intuitive to operate, install and reload ribbons and labels.
- Simple to maintain, no specialized training required.

When it's on the line.

[Section Home](#)[Documentation](#)[Drivers](#)[Firmware](#)[Printer Repair](#)[How do I...?](#)[Contact Zebra](#)[Locate a Reseller](#)[Go to Reseller Login](#)**Quick Specs**

- Prints at 203dpi (8 dots/mm)
- Prints labels up to 4.65" (118mm) wide
- Prints labels up to 22" (559mm) long at 2"/sec (51mm/sec)
- Thermal Transfer printing

300798

- ZPL II compatibility provides universal programming and communication networking in any ZPL software environment
- The standard BAR-ONE® Lite software provides a Windows™ WYSIWYG format to quickly and easily create diverse label formats.

Affordable

- Outstanding combination of value and performance - these reliable printers are ideal for a variety of applications, from the front office to an industrial shop floor.

Zebra Service & Support

Owning a Zebra printer opens the door to a myriad of resources, giving you ready access to information, advice and answers

- Superior documentation
- Dedicated technical support line
- Worldwide network of certified service providers

Expert assistance is as close as your phone or fax. And with Zebra's Internet Product Support (ZIP Support), interactive technical support is only a click away. All day, everyday.

Fast Find

Choose Your Destination --> 

[[Copyright](#) | [Privacy Statement](#) | [ISO Registration](#) | [Y2K](#) | [Site Map](#)]

Send [comments](#) about our WWW site

300799



Scanner 3500S and 3500D

Continuous scanning. Start right here.

The *Kodak Digital Science*™ Scanner 3500 is hard to beat for mid-range scanning productivity. Both the simplex and duplex model scan any document you load at speeds up to 75 pages per minute (letter size or A4 landscape format). But the throughput numbers are only part of the story. Add exceptional reliability, ease of use, and affordability, and you'll see that the Scanner 3500 is a great way to improve your scanning efficiency.

RELY ON THE TRANSPORT SYSTEM THAT HANDLES THE PAPER FOR YOU.

The state-of-the-art feeder and paper path of the Scanner 3500 virtually eliminate labor-intensive document presorting, jams, and rescans. The feeder accepts and feeds batches of mixed paper sizes and weights. It's easy to add more pages to a stack while scanning for continuous feeding. The transport system gently, yet quickly, moves documents through a short path without sharp bends or constrictions. The result is non-stop scanning that's practically trouble-free.

EASY ON YOUR OPERATORS.

EASY ON YOUR BOTTOM LINE.

A single button is all you push to run the Scanner 3500. On-board processing maintains image quality automatically. Training itself is fast and simple. The scanner comes with an interactive CD, complete with video clips that instruct and help guide operators through all scanner procedures. So operator turnover isn't a problem with the Scanner 3500.

Industry-standard interfaces and drivers bundled with the Scanner 3500 enable it to support a wide range of applications. The Scanner 3500 is especially suited for departmental and distributed imaging, forms processing, and scan-to-Web applications. Both simplex and duplex models provide outstanding performance at prices that are hard to beat. User-replaceable parts, such as lamps and feeder and separation rollers, help keep the cost of ownership low by minimizing downtime and service calls. Plus, the Scanner 3500 is protected by your choice of standard or enhanced warranties, and backed by worldwide service and support from Kodak.

SCAN WITH CONFIDENCE AND THE KODAK DIGITAL SCIENCE SCANNER 3500. For more information about how our newest scanner family member can help you improve your scanning, contact your value-added reseller of *Kodak* Products, call 1-800-243-8811 or access www.kodak.com/go/businessimaging.

300800

Kodak Digital Science Scanner 3500S and 3500D

FEATURES AND BENEFITS

- Reliable, forgiving paper transport—virtually eliminates time-wasting interruptions and document presorting to enhance throughput.
- Simple, two-button operation—enables casual operators to be productive with minimal training.
- Quiet operation—fits in an office environment.
- Flexible feeder—handles batches of mixed sizes and weights from onion skin to card stock to save labor; allows reloading while feeding for continuous scanning.
- Simplex and duplex models—lets you match scanner function to your application without paying for capability you may not need.
- Adaptive Threshold Processing (ATP)—maintains image quality and host performance through dynamic thresholding and image compression.
- Automatic overlap/double feed detection—prevents jams and damaged originals.
- User-replaceable service items—reduce service calls and scanner downtime by allowing operator to swap rollers, lamps, and guides without special tools or training.
- Warranty—protects your productivity with service from Kodak.
- Optional dropout color lamps (red, green, blue)—enable scanner for forms processing.
- Scanner CD support—provides on-line training and help for operators in an informative text/video format.

SPECIFICATIONS

Throughput (simplex or duplex, 8.5" x 11"):

Feeding orientation	Resolution	
	200 dpi	300 dpi
Portrait	60 ppm	40 ppm
Landscape	75 ppm	50 ppm

Recommended daily volume: from 1,000 to 10,000 pages (up to 20,000 images duplex)

Source document input:

Minimum: 2.5" L x 2.5" W (6.4 x 6.4 cm)

Maximum: 26" L x 11.7" W (66.0 x 29.7 cm)

Thickness: 0.0015" to 0.0300" (0.038 mm to 0.760 mm)

Weights: 13 to 110 lbs. (50 to 200 g)

Feeder capacity: 150 page stack (can be reloaded continuously for infinite feeding while scanning)

Throat width: 12" (30.4 cm)

Imaging:

600 dpi CCD developed by Kodak

Output:

200 or 300 dpi

Output format:

CCITT Group 3-1D, 3-2D, 4 or uncompressed

Dimensions:

Height: 11.5" (29.5 cm)

Width: 21" (53.5 cm)

Depth: 27.5" (70.0 cm)

Weight: 60 lbs. (27 kg)

Interface support:

SCSI

Bundled drivers:

ISIS and TWAIN

Environmental factors:

Operating voltage range: 100 to 127 V AC, or 200 to 240 V AC, 50/60 Hz, single phase

Operating temperature: 59 to 86 °F (15 to 30 °C)

Operating humidity: 15 to 76% (dry bulb)

Altitude: up to 8,000 feet (2,400 meters)

Acoustical characteristics:

sound power (max.) 70 dBA Lwa

sound pressure (max.) 64 dBA Lpa

Approvals:

UL 1950, C-UL 950, EN60950, CE Mark, FCC Part 15 Class A, Canada ICES-003 Class A, EN55022 Class B, CISPR22 Class B, VCCI Class A, C Tick Mark, Taiwan CNS 13438 Class A

Warranty:

Standard: 90 day, on-site

Enhanced: Optional 12 month, on-site

Optional 24 month, on-site

Both Standard and Enhanced options are backed by the Total Satisfaction Guarantee Program.

Made in U.S.A.:

Designed and manufactured by Kodak.



For manufacturing of imaging equipment.

EASTMAN KODAK COMPANY

Business Imaging Systems
Rochester, NY 14650
1-800-243-8811

KODAK CANADA INC.

Business Imaging Systems
Toronto, Ontario M6M 1V3
1-800-465-6325

KODAK (AUSTRALASIA) PTY. LTD.

Business Imaging Systems
North Ryde NSW 2113
AUSTRALIA
61-2-9870-4222

KODAK (FAR EAST) LIMITED

Business Imaging Systems
North Point, Hong Kong 07021
852-2654-9330

In other areas, contact the Kodak company serving your country or Eastman Kodak Company, Business Imaging Systems, International Markets, Rochester, NY 14650 U.S.A.

For other areas outside the U.S.A., call 716-722-9287

Kodak, Digital Science, and the Digital Science monogram are trademarks.

<http://www.kodak.com/go/businessimaging>

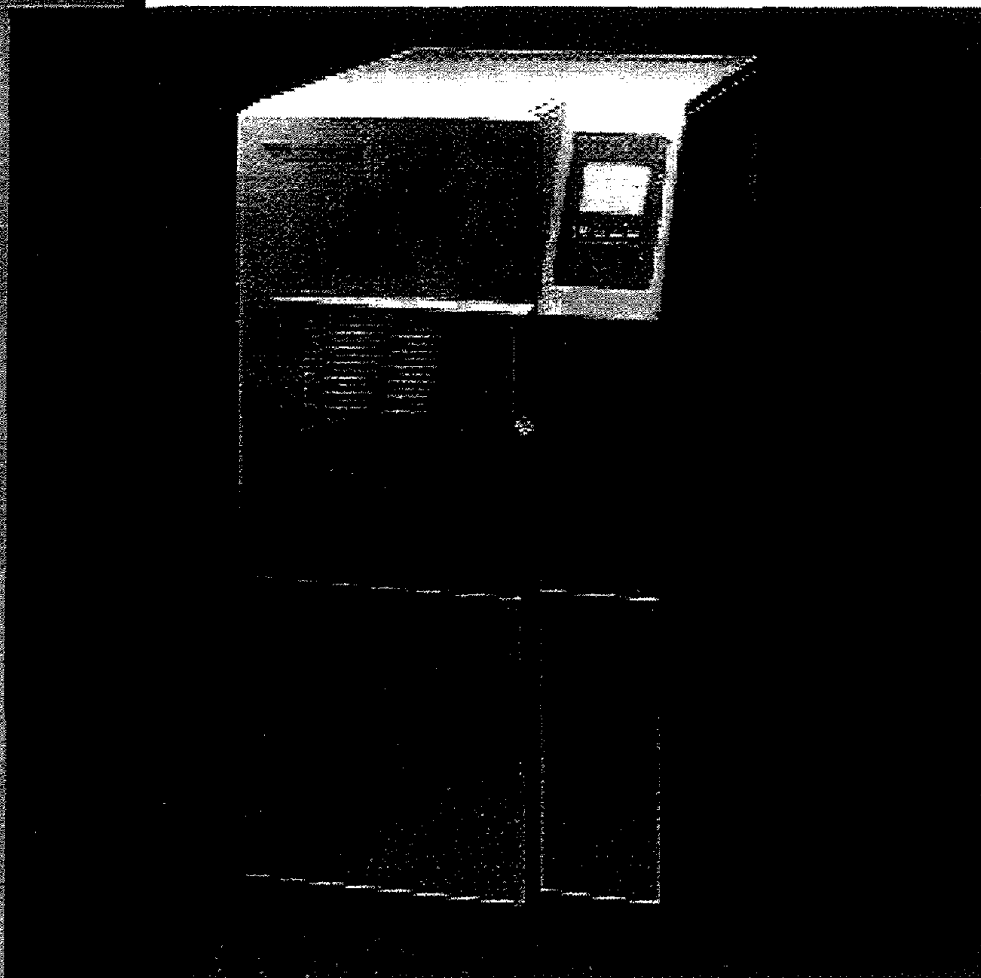
**BUSINESS
IMAGING
SYSTEMS**





Document Archive Writer, Model 4800

The high-speed
Kodak Digital Science
Document Archive
Writer creates backup
analog copies of
digital documents.



Get your Digital Archive off to a fast start.

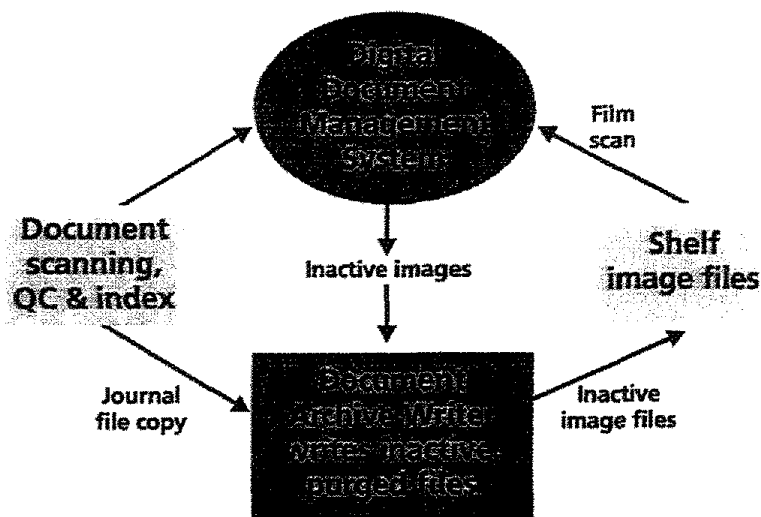
The *Kodak Digital Science™* Document Archive Writer, Model 4800 rapidly converts digital documents to an analog format and media for low-cost, long-term storage and access as part of the *Kodak Digital Science* Digital Document Archive System.

The Document Archive Writer and supporting software accepts document images from many digital imaging systems in Tagged Image File Format (TIFF). You can organize them according to your requirements, create an index, and write the images to film. Now you can purge inactive information from expensive on-line and near-line storage with full assurance that you'll be able to retrieve and view it long into the future.

300802



Kodak Digital Science Document Archive Writer, Model 4800



A Digital Document Archive System is easy to interface with your current digital document management system.

The Document Archive Writer accepts TIFF digital document images and converts them to analog images on 16 mm silver halide-based film in excess of 100 letter size or A-4 images per minute at 40:1 reduction. Up to 18,000 letter-size images at 40:1 reduction will fit on a single roll of film for storage that's extremely compact.

DOCUMENT ARCHIVE WRITER CAPABILITIES.

- connects via Ethernet
- appears as drive on system for easy integration
- accepts bi-tonal TIFF image files; uncompressed or Group III or IV compressed to support flexible input
- accepts image resolutions from 100 to 600 dpi

- scales images automatically from 20:1 to 60:1 reduction to readily match your image application format requirements
- adds image-mark coding to film to support rapid, automated retrieval
- writes in simplex or duplex (front/back) formats
- writes to one or two rolls of film for optional backup and security

ASSOCIATED COMPONENTS:

Kodak Digital Science Archive Writer Interface Software resides on a host workstation.

It efficiently manages the image formatting and indexing.

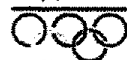
KODAK Archive Storage Media is a 16 mm microfilm specially optimized

for the Document Archive Writer. The standard 215-foot roll length provides uninterrupted and unattended writing session. The Kodak Archive Storage Media provides AIIM/ANSI compliant image storage that meets archival standards at a very low cost. Stored images can be accessed by automated retrieval devices, including the Kodak Imagelink™ Digital Workstation 2000, and scanned for electronic delivery back to your digital document system.

Kodak Digital Science Archive Writer Cassette, Model 66 provides easy loading of Kodak Archive Storage Media.

Kodak

Official Imaging Sponsor of the Olympic Games



For manufacturing of imaging equipment.



Intelligent Energy Control

EASTMAN KODAK COMPANY

Business Imaging Systems

Rochester, NY 14650

1-800-243-8811

For outside the U.S.A., call 716-722-9287

KODAK CANADA INC.

Business Imaging Systems

Toronto, Ontario M6M 1V3

In other areas, contact the Kodak company serving your country or Eastman Kodak Company, Business Imaging Systems, International Markets, Rochester, NY 14650, U.S.A.

Kodak, Digital Science, Imagelink, "e" mark, and the ds monogram are trademarks.

<http://www.kodak.com>

Policy #11	Policy #11	Policy #11	Policy #11	Policy #12	Policy #12	Policy #12	Policy #12
6/1/93	7/6/93	9/23/93	11/19/93	4/15/93	4/23/93	11/23/93	11/25/93

Analog versions of digital documents will remain readable for a hundred years or more.

300803

**BUSINESS
IMAGING
SYSTEMS**





customer support || [about us](#) || [sales & partners](#) || [press room](#) || [scanning solutions](#) || [medical imaging](#)
[site map](#) || [what's new](#) || [resources](#) || [contact us](#) || [home page](#)



The upgradable large format scanner that's perfect for today, ready for tomorrow.

Finally, there's a high-quality scanner that combines affordability and flexibility. The TruScan Select scanner from VIDAR is the perfect solution for all your black-and-white, large format scanning needs. With the best feature set of any scanner in its price range, Select lets you easily upgrade your scanner's speed and resolution at any time. The result is a cost-effective scanning solution that keeps pace with your expanding needs. Ideal for a Variety of Engineering Applications

Whether you need a scanner for a printing application, archiving, CAD drawing conversion, or editing - Select is your perfect partner as you advance from paper drawings to digital records. Like all of VIDAR's industry leading scanners, the Select offers superior paper handling, high-quality image capture, fast production rates, easy-to-use scanner control software, and above all, proven reliability.

OUR ENGINEERS STAND ON RELIABILITY

With a combined weight of 550 lbs., the new Select withstood the abuse, and maintained it's optical alignment.



Quality Images at High Production Rates

All Select scanners have a true optical resolution of 400 dpi and include VIDAR's unique Adaptive Area Thresholding™ system. Adaptive Area Thresholding enables the scanner to automatically adjust and separate useful information from background clutter, so that, even if your drawings are in poor condition, you'll get clean, high quality images. And with Select, there is no system performance penalty to pay in order to achieve quality images.

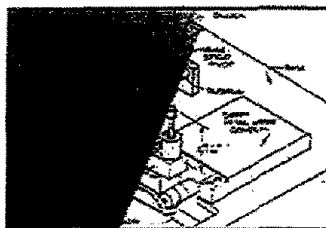
Features that Make the Difference

When you look underneath the hood, TruScan Select offers a host of state-of-the-art features and technologies that make it the ideal scanner for all your vital electronic document management applications. These include: Superior paper handling: The Select's horizontal straight paper feed path makes it easier to position and feed drawings, resulting in improved productivity and better scanning conditions. The scanner's protective roller system also keeps fragile drawings safe during the scanning process.

300804

Multiple camera design:

Some scanners use a series of mirrors to compensate for table-top design. This approach, while generally less expensive for the manufacturer, often produces distortion in parts of the image. The Select uses eight cameras and no mirrors. This eliminates the need for field adjustment and mirror cleaning. In addition, the camera's straight view of the drawing prevents light loss and scatter, mirror image distortion, and interference from dust on the mirror.

Easy-to-use Software:

TruScan Select includes VIDAR's 2D Adaptive Area Thresholding.

Every Select scanner includes a copy of VIDAR's TruInfo™ scanner control and archiving software. TruInfo not only lets you scan quality images with a single click of your mouse, but also gives you the ability to quickly and efficiently index, organize, and share your scanned drawings. Other TruInfo functions include viewing, image annotation, and printing.

Select Works Right Out of the Box

Select is as simple to install, as it is easy to operate. It's delivered with TruInfo software, Adaptec SCSI card, cables, and documentation. Simply connect the cables, install the card and the software, and you're on your way. No adjustments of any kind are required at installation.

Tomorrow's Scanning Solution Today

With Select, you're assured that the scanner you purchase today will satisfy tomorrow's requirements. Where else can you get such a safe and secure investment? Call today to find out more about the upgradable TruScan Select scanner.

TruScan Select Facts

- **Accuracy:** 0.1% between any two points in any size document up to E or A0 size.
- **Image Processing:** 1D edge sharpening on the fly.
- **Feed Mechanism:** Horizontal, straight
- **Optical Path:** Straight, no mirrors
- **Thresholding:** VIDAR's 2D Adaptive Area Thresholding™ (AAT)
- **Software:** VIDAR's TruInfo for scanner control and archiving (included)

Upgradable Models:

Models	Optical Resolution	Maximum Resolution	Speed at 400 dpi	Speed at 200 dpi
Select Base Model	400 dpi	400 dpi	.5 ips	1 ips
Select Upgrade A	400 dpi	600 dpi	1.0 ips	2 ips
Select Upgrade B	400 dpi	800 dpi	2.0 ips	4 ips

Specifications are subject to change without notice.

300805

Raptor Firewall

Announcing
Version 6.0
click here!

*For Windows NT,
Solaris, and HP-UX*

**Complete Protection For Securing Your
Network Perimeter**

Easy Setup and Scalable Management

Integrated Virtual Private Network (VPN)

Comprehensive Logging and Reporting

**A Comprehensive Architecture for Security
Policy Management**

Features and Benefits

Platforms and Specifications

Product Options

"We Chose AXENT's Raptor Firewall, based on their experience, their reliability, NT capability, and the high rating given them by independent industry groups."

— Sergio Cortez, Litton Industries

[Home](#) [Highlights](#) [About AXENT](#) [Products](#) [Support & Services](#) [Investor Relations](#) [News & Events](#) [Partners](#)
Contact AXENT

Copyright 1998 AXENT Technologies, Inc. All Rights Reserved

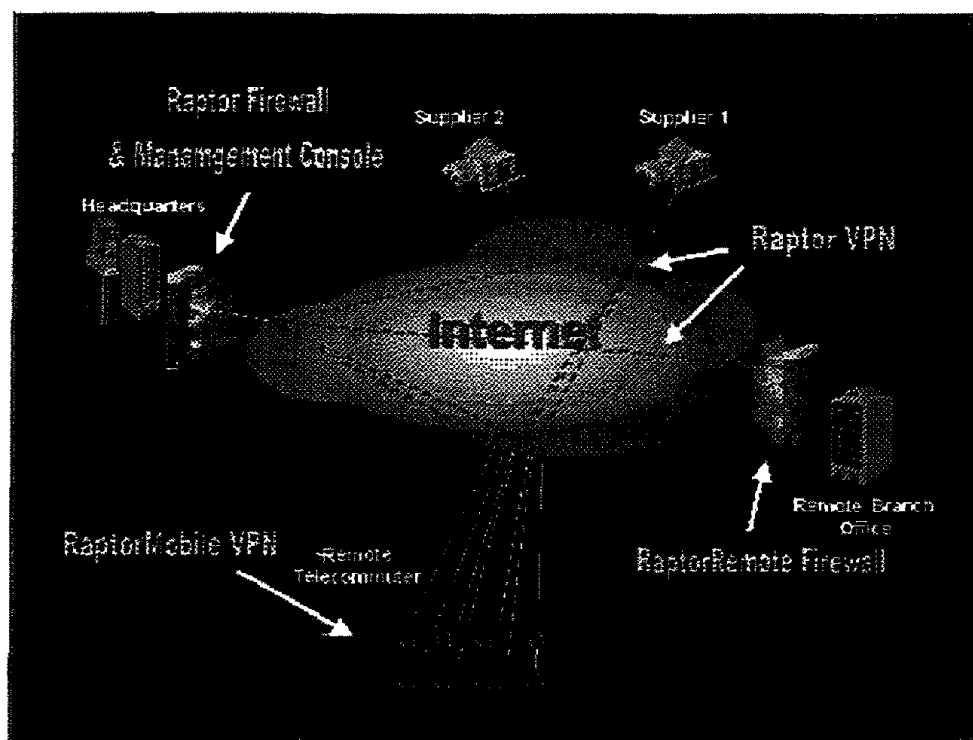
Complete Protection For Securing Your Network Perimeter

Organizations around the world depend on the Raptor Firewall's award-winning architecture and functionality to secure their private networks. The Raptor Firewall's intuitive management interface and high performance, multi-threaded services, make it the most secure, manageable, and flexible solution for your enterprise Internet security needs.

The Raptor Firewall for Windows NT, Solaris, and HP provides complete network protection by integrating application-level proxies, network circuits and packet filtering into a unique perimeter security architecture. This data inspection technology ensures that the data entering and leaving your corporate network is validated at all levels of the protocol stack. In addition to security the Raptor Firewall includes:

- The Raptor Management Console (RMC) for easy management of local and remote firewalls.
- Standards based VPN support (IPSec and Internet Key Exchange(IKE)) for connecting to remote offices and users.
- A comprehensive selection of strong user authentication alternatives.
- WebNOT and NewsNOT — the only firewall-integrated content blockers for filtering WWW and Internet Usenet groups
- High availability, which enables system failover for maximum security uptime.

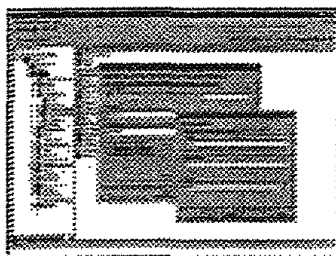
300806



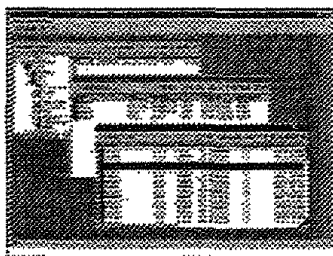
Easy Setup and Scalable Management

The Raptor Management Console (RMC) simplifies policy configuration and management by implementing Microsoft's Management Console (MMC) technology. The RMC displays a complete list of firewalls under management in one window pane and firewall specific data in an adjacent pane. Coupled with a centralized alarming system, a network administrator can easily manage local and remote firewalls from a single Windows NT workstation. A local management console is also provided for UNIX based Raptor Firewalls.

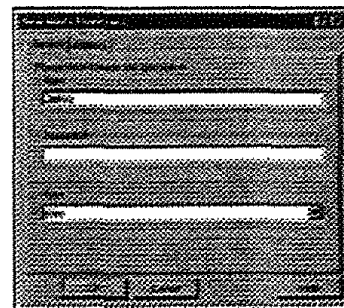
MMC Screenshots (click on for larger version)



Manage and configure distributed firewalls from a single console.



Centralized monitoring of multiple firewalls.



The flexibility to build security rules consistent with business needs.

300807

Integrated Virtual Private Networking (VPN)

Raptor Firewall includes an integrated VPN module that enables network administrators to securely extend corporate networks, across the Internet, to remote offices and users. The Raptor VPN solution includes strong user

authentication, data encryption and data integrity to ensure the security of the information as it passes across private WANs and the Internet.

Comprehensive Logging and Reporting

The Raptor Firewall log files contain information that includes: session duration; byte counts; full URLs; user names and authentication methods. Administrators can use this information to generate detailed statistical and session trend reports ... or they can export to databases to perform custom analysis.

A Comprehensive Architecture for Security Policy Management

Raptor Firewall's unique combination of application-level proxies, network circuits and packet filtering ensure that data traversing the firewall is completely managed by the network administrator. This allows the administrator to build network policies that are consistent with corporate policies.

In addition to secure application proxies, Raptor Firewalls use a unique best-fit algorithm for matching access rules to connection attempts. As a result, they allow administrators to create rules in any order without inadvertently creating security holes. Only access attempts that meet the exacting requirements of an explicit rule are permitted.

Features and Benefits

Features	Benefits
Management	<ul style="list-style-type: none"> • Cross-platform (UNIX and NT) firewall management from a single console • Reliance on best fit, non-order-dependent, explicit rules rather than filtering criteria to evaluate connection attempts
Security	<ul style="list-style-type: none"> • Extensive built-in application-proxy support for popular protocols • Automatic and continuous system hardening of the firewall host to protect against intrusions into the firewall system • Automatic blocking of all TCP and UDP ports • Integrated anti-spamming measures to harden the system • Integrated anti-spoof and IP routing protection • ICSA certified
Scalability	<ul style="list-style-type: none"> • Support for multiple network cards for protecting WWW, FTP, Email servers that need to be directly accessed from the Internet • Completely configurable Network Address Translation (NAT) for hiding/exposing server and client addresses • Support for symmetric multiprocessing (SMP) • Cross-platform support
Extensibility	<ul style="list-style-type: none"> • Support for Virtual Private Networks (VPNs) with: <ul style="list-style-type: none"> • Encryption: DES40, DES56, Triple DES • Authentication: ISAKMP/Oakley key management • Protocols: IPSec, and swiPe security protocols • Network Options: Ethernet, Fast Ethernet, Token Ring, Frame Relay, ATM, & FDDI • Year 2000 compliant

Platforms and Specifications

- **Windows NT 4.0 (Intel Pentium)**— Recommended configuration is a Intel Pentium II 300MHz or better.
- **Solaris 2.5.1 & 2.6 (SPARC)**— Recommended configuration is a SPARC station Sbus or PCI system.
- **HP/UX (PARC)** - Recommended configuration is HP9000 Series 700 and 800 E 35 systems.
- **Monitor**—Color w/Super VGA, 1024 X 768 resolution.
- **RAM**—32MB of RAM minimum, 64MB recommended.
- **Disk**—1GB hard disk; 200 MB minimum Swap File.
- **Other** - Mouse or pointing device, CD-ROM drive, minimum of two network interface cards.

300809

Product Options

- **Raptor Firewall VPN:** Allows corporation to use the Internet as a secure connection to remote branch offices.
- **RaptorMobile:** Extends your corporate VPN to laptop users and telecommuters.
- **MIMESweeper for Raptor Firewall:** Provides virus checking to documents traversing the firewall.
- **Telemate.NET:** Enables the creation of graphical reports based on firewall logfiles.
- **WebNOT/NewsNOT:** Content blockers for filtering WWW and Internet Usenet groups.

 [Home](#)  [Highlights](#)  [About AXENT](#)  [Products](#)  [Support & Services](#)  [Investor Relations](#)  [News & Events](#)  [Partners](#)

[Contact AXENT](#)

Copyright 1998 AXENT Technologies, Inc. All Rights Reserved

300810

Search

[Software](#)
[Database and Data Management](#)

DB2 Universal Database
[Overview](#)
[How to buy](#)
[Support](#)
[Download](#)
[More information](#)
[News](#)
[Case studies](#)
[Library](#)
[Events](#)
[Education](#)
[Business partners](#)

DB2 Universal Database

DB2 Universal Database is #1 in benchmark performance, and Dataquest, Inc. reports that IBM was #1 in database license market share in 1998, besting Oracle and Microsoft!

Judge for yourself — [download Version 6.1 beta code for Windows NT or Linux!](#)

Features at a glance

NEW [Download DB2 Universal Database Version 6.1 beta code](#)

DB2 Universal Database version 5.2 delivers these powerful business benefits:

- Universally applicable: to data warehousing, decision support, [data mining](#), online transaction processing (OLTP), and [online analytical processing](#) (OLAP)
- Universally scalable: from laptops to desktops to workgroups to the largest enterprise systems
- Universally accessible: from a wide range of clients, across computer platforms, and over the Internet
- Universally manageable: through great new graphical tools for controlling all database functions
- Universally extensible: with [DB2 Extenders](#) for text, image, audio, video, spatial, and more
- DB2 Universal Database version 5.2 runs on [Windows NT](#), [Windows 95/98](#) (Personal Edition only), [OS/2](#), [AIX](#), [Hewlett-Packard HP-UX](#), [Sun Solaris](#), and [Unixware 7](#). Client access is provided from these platforms plus [DOS](#), [Apple MacOS](#) and [Silicon Graphics IRIX](#), plus Web access with popular browsers and Java applications thanks to DB2's native [Java/JDBC support](#), and its built-in [Net.Data](#) capabilities.



Now, get a [free 60-day trial CD-ROM](#) of DB2 Universal Database version 5.2 for [Windows NT](#), [Windows 95](#) (Personal Edition), [OS/2](#), [AIX](#), [HP-UX](#), [Sun Solaris](#), or [Unixware 7](#). Or, [download a 60-day trial version](#) of DB2 Universal Database version 5.2 for [Windows NT](#), [Windows 95](#) (Personal Edition), [OS/2](#); also available, [DB2 Universal Database for Linux beta code](#).

News

- [Announcing DB2 Universal Database Version 6.1 Beta - Now Available via Download or CD-ROM](#)
- [New Version of IBM DB2 Universal Database Strengthens Support for e-business](#)
- [IBM Business Partners Benefit from IBM's Leadership in Database Market](#)
- [IBM is #1 Choice for Data Management Solutions](#)
- [Siebel Systems Delivers Applications on DB2](#)
- [Journyx and IBM to Deliver Enterprise Project and Time Tracking Software](#)

Buy now
[ShopIBM/US](#)



Buy other versions

- [DB2 Universal Database V5.2](#)
- [DB2 Universal Database V5.0](#)

Spotlight

[View our new DB2 Universal Database "webinars" in Realplayer G2 streaming video format.](#)

Operating systems

DB2 Universal Database runs on [AIX](#), [HP/UX](#), [OS/2](#), [OS/390](#), [OS/400](#), [Sun Solaris](#), [UNIX](#), [VM/ESA](#), [Windows 95/98](#) and [Windows NT](#). Please see individual Edition pages for more details.

Editions

- [DB2 Personal Developer's Edition](#)
- [DB2 Universal Developer's Edition](#)
- [DB2 Universal Database Personal Edition](#)
- [DB2 Universal Database Workgroup Edition](#)
- [DB2 Universal Database Enterprise Edition](#)
- [DB2 Universal Database Enterprise-Extended Edition](#)

Related links

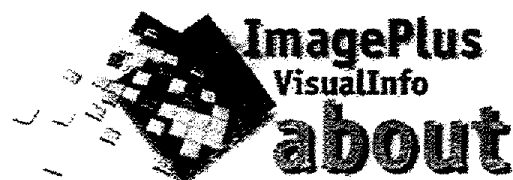
- [Latest DB2 Benchmarks](#)
- [10-part online series, "The Database You Have in Mind"](#)
- [DB2 Dominates Database Awards](#)
- [Get a Free BI Solutions CD-ROM](#)
- [10-part online series, "The Road to Business Intelligence"](#)

[Privacy](#) | [Legal](#) | [Contact](#)

300811

Search

IBM : Software : Data Management : ImagePlus :



- [Overview of ImagePlus VisualInfo](#)
- [VisualInfo object management](#)
- [VisualInfo library server](#)
- [VisualInfo object servers](#)
- [Storage management](#)
- [The client](#)
- [Facsimile](#)
- [Routing and workflow](#)
- [Integration with business applications](#)
- [Intranet and Internet access with IBM ContentConnect](#)
- [Scalability](#)
- [Scanning and high-volume image capture](#)
- [Implementation Skills](#)
- [Software Support](#)
- [Training](#)
- [Summary](#)

Overview of ImagePlus VisualInfo

ImagePlus is designed to address the imaging needs of corporate work environments. VisualInfo is one member of the ImagePlus family which has more than 3,900 installations. ImagePlus VisualInfo operates on a broad and scalable range of servers including Windows NT, AIX, MVS/ESA, OS/390 and OS/2. Clients can be Windows 3.1, Windows 95, Windows NT, Java or Internet browser clients such as Netscape Navigator or MS Internet Explorer.

As a result of this tremendous platform breadth ImagePlus VisualInfo offers image and document processing capabilities for both small and large organizations. Departments located anywhere across an enterprise can access their own documents as well as tap into all the related documents across the enterprise. VisualInfo provides for the distributed placement of documents and other data on a variety of LAN-based and host-based servers to meet the needs of an organization.

Highlights

VisualInfo scanner support

Find out which scanners are certified to work on the various VisualInfo client platforms, and learn where to obtain scanner drivers.

IBM ImagePlus VisualInfo Version 2.4

On December 15, 1998, IBM announced Version 2 Release 4 of IBM EDMSuite ImagePlus VisualInfo.

Exciting SAP Connection to ImagePlus

IBM CommonStore combines the powerful functions of IBM ImagePlus (VisualInfo, VisualInfo for AS/400) with the strengths of the business application software SAP R/3.

IBM ImagePlus Intelligent Forms Processing Solution

The IBM ImagePlus Intelligent Forms Processing Solution (IFP) is IBM's most advanced forms processing system. IFP relies on technical advances in the use of Intelligent Character Recognition (ICR) and other forms processing technologies to reduce the cost of data capture from documents.

IBM ImagePlus VisualInfo Support page

Download the latest VisualInfo FixPacks, view APAR Information or search for APARs by number or keyword.

[Back to top](#)

300812

ImagePlus VisualInfo provides the capabilities to scan, import, store, secure, index, retrieve and route document-based information. It includes an "out of the box" application for quickly implementing a system with no programming required. It also has a powerful set of Application Programming Interfaces (APIs) to enable custom integration into your business applications for exceptional productivity and ease of use.

ImagePlus VisualInfo is a member of the IBM Enterprise Document Management Suite (IBM EDMSuite). This enables seamless integration with Document Management and Computer Output to Laser Disk/COLD computer output archiving and presentation. VisualInfo can manage document images and word-processing documents, as well as spreadsheets, EDI, voice and video clips. With its System Managed Storage capabilities, VisualInfo provides for the automatic migration of the information objects through magnetic and optical storage devices based on user-specified requirements for speed of access and optimization of information system costs. VisualInfo is also Year 2000 ready.

VisualInfo object management

ImagePlus VisualInfo is an object management system. Objects are pieces of business information such as scanned images, word processing documents, computer coded data or spreadsheets. These business objects are cataloged in the VisualInfo library server, providing a common repository of indexes for easy search and retrieval. The business objects themselves may be located centrally or may be decentralized and close to the users. They are stored in VisualInfo object servers. In all cases, with appropriate user security, any object located anywhere on the network can be retrieved and presented to the user.

VisualInfo library server

The ImagePlus VisualInfo library server is the single point of control for the system. It performs many functions, including:

- Receiving and managing requests from clients
- Controlling security and access
- Dispatching requests to object servers to accept new objects or to move objects to a client
- Receiving confirmation from the other servers that an action was completed, and if not, initiating appropriate actions to ensure database integrity.

The library server also holds the index information and performs requested searches. VisualInfo provides powerful access control and security, enabling you to control who has access to which functions and which objects. VisualInfo provides flexibility for controlling access to index classes (document types), workbaskets and advanced workflow processes. By using access lists, an administrator can control all levels of access to these resources, either by user or by group. For example, only certain people might be allowed to read documents stored in the "Employee Data" index class, and even fewer might be allowed to store into this index class. VisualInfo library servers operate on Windows NT, OS/2, AIX and OS/390 platforms.

VisualInfo object servers

The ImagePlus VisualInfo object servers hold digitally-stored objects such as images, word processing documents, spreadsheets, voice clips, video and EDI. The VisualInfo system supports a large number of object servers. The architecture is entirely flexible with the best location for objects being determined during the design phase, based on your requirements and VisualInfo system capabilities.

You can also implement object servers as cache servers. This means that you can store documents in a central location but have a copy located in another

300813

can store documents in a central location but have a copy located in another object server (cache server). Once retrieved to the remote cache server, the documents remain there on magnetic storage for further retrievals at local rapid response times. Companies that implement this approach generally have a desire to retain their documents at the corporate location data center but want to provide faster response times for remote users. VisualInfo object servers operate on Windows NT, OS/2, AIX and OS/390 platforms.

Storage management

ImagePlus VisualInfo manages the storage and migration of objects without user intervention. The objective is to assure a low cost of storage, yet maintain the best possible response time for users. This is usually accomplished by storing incoming documents on magnetic storage during their active life cycle and then automatically migrating them to optical storage or tape when the retrieval frequency is much lower. VisualInfo utilizes IBM's award winning Adstar Distributed Storage Manager (ADSM) for storage management on both the AIX and Windows NT platforms. ADSM provides backup and archive services, and supports a very large number of IBM and non-IBM storage devices. On OS/390 Object Access Method (OAM) provides similar services. Utilizing one or more IBM 3995 Optical storage libraries and 5.2 gigabyte industry-standard cartridges, the storage needs of any enterprise can be handled. About 20,000 images can be stored in a gigabyte, or more than 100,000 on a single optical platter.

The client

ImagePlus VisualInfo comes with a prepackaged, no-charge client that provides an easy-to-use graphical interface on Microsoft Windows 3.1, Windows 95 and Windows NT. Most functions are simple point-and-click operations. Users can perform searches and work with documents or folders that have been routed to them. Tables of contents for folders provide the information users need to select the necessary documents or business objects for processing.

The client presents image documents and the user, if authorized, can annotate those documents with a wide range of markups, such as highlighting, "type on" text, note, circle, square, line, arrow or stamp. Free-form text comments can also be added to a note log which is attached to each document and to each folder. Following is a screen shot of the VisualInfo client image viewer.

Validates our concern

Undergraduate Application for Admission **Reject 9/10/1995** Page: 5

Name: Curtis Stealy SSN: 222-22-2222

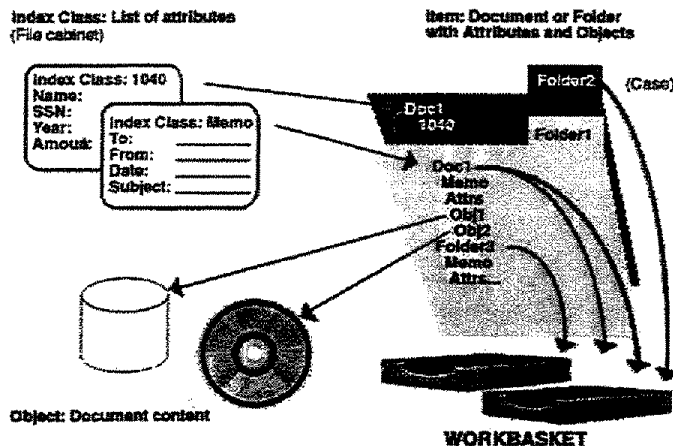
Reviewed by Jameson and Hawley in conference call 9/8/1995

only accepted, including other institutions of the Trustees' University System. We are not listed below. In order to be eligible for transfer credit for previous college work, you colleges accepted. To receive transfer credit for military experience, you must submit of credits from all institutions attended? ☒ Yes ☐ No

Name of Institution	City, State	From	To	Number of credits earned	Type of degree earned	Transf. awarded
Alameda School of Gardening	Alameda, California	6/94	6/95	3	NONE	

300814

Documents can be placed into folders and folders can be placed into other folders. Documents and folders can reside in one or more folders. Each folder can have its own indexing, and users can search for documents or folders. Items can be printed or faxed as needed. The value of these functions is that they provide users with similar capabilities to what they have today with paper documents and folders. The following diagram shows the VisualInfo data model.



When a user selects an object, such as a word processing document, the native word processor can be launched automatically and the document displayed to the user. This approach allows the user to edit and then re-store the document. Many companies have used this capability to add video, voice, CAD and other native applications to their imaging systems.

Another approach for viewing objects is to retrieve and display the document in the image client window. This is a good option for those applications where the functionality of the native application is not needed; over 50 different formats (such as WordPerfect, Microsoft Word, Excel, Ami Pro and others) are supported.

In effect, the desktop and your business applications become integrated with the launching of appropriate supporting programs. The VisualInfo library and object servers pull together the pointers and actual storage of the business information, in essence becoming a workgroup server for the users. All business information is in one location allowing easy access and sharing with authorized users.

There are additional functions in the ImagePlus VisualInfo client:

- The *import and export* function for images and text information allow users to exchange information between their other applications and VisualInfo.
- The *basic search* capability allows users to query the system and retrieve documents and folders. An example would be entering an account number and retrieving the customer folder. It should be noted that VisualInfo can have a large number of search attributes identified at the document level and at the folder level.
- An *advanced search* capability provides for the simple creation of complex queries which can then be saved for future use. An example of advanced searching would be to find all photographs for John Smith, in a certain date range. Advanced searches help you to ensure that users can use the power of electronic searches to find the most relevant information to their queries.
- An automatic capability to *convert dynamic SQL to static SQL queries* provides for faster response with less system overhead.

300815

Facsimile

IBM FaxRouter is a high-performance fax solution that can be integrated with ImagePlus VisualInfo. Incoming faxes are captured at the fax server and then automatically imported into VisualInfo. Using several techniques for telephone number identification, faxes can be automatically directed to appropriate queues. Users can select documents from the VisualInfo client and then fax them out. Other facsimile solutions which accept input from a print driver can also be used for outgoing faxes.

Routing and workflow

ImagePlus VisualInfo includes workflow components to allow the movement of documents and folders from one work basket or queue to another. Users can simply choose, on an ad hoc basis, where to send a document or folder. Serial workflows can also be predefined for standard work processes. VisualInfo can also be integrated with MQSeries Workflow to provide a very powerful work management capability.

MQSeries Workflow and Workflow BPR provide the capability to document, animate, simulate, and automate your business process flows. They also help you to gather and measure the resulting production statistics, which you can then use to improve your business processes even further. Utilizing these tools you can drive continual process improvement in your organization. Once in production, MQSeries Workflow will initiate requests to VisualInfo for the retrieval or storage of supporting documents at appropriate process steps.

To learn more about the powerful capabilities of MQSeries Workflow, review our [Web-based demonstration presentation](#).

Integration with business applications

The ImagePlus VisualInfo client provides a prepackaged, end-user interface for access to images and other objects. It provides a large number of functions to search for and manipulate documents. In addition, since many companies have chosen to build custom interfaces which are tied tightly to existing business applications, VisualInfo provides integration capabilities utilizing a variety of techniques. The VisualInfo client provides an extensive number of application programming interfaces and function calls that can be called from any programming tool supporting a C interface. Or, you can use the OLE automation interfaces. API functions are available as methods to several different OLE objects. Microsoft Visual Basic, Powersoft PowerBuilder and other programming tools can be used to build custom applications. User exits are also available to enable integration. In addition, Attachmate's macro language can also be used to interface with the OLE objects for integration with 3270 applications. In total, these capabilities provide tremendous flexibility when integrating with line-of-business applications. Integrating VisualInfo into new or existing business applications can often provide the highest return on your investment because the interface is custom tailored to the needs of that specific application.

Intranet and Internet access with IBM ContentConnect

IBM's solution for intranet and Internet access is ContentConnect: a standard component of IBM's Enterprise Document Management Suite (IBM EDMSuite) strategy. EDMSuite is IBM's approach to pulling together all of the document management solutions that a company needs into a single cohesive solution. Let's take a moment to further understand EDMSuite before explaining more about ContentConnect and how it provides intranet and Internet access to ImagePlus VisualInfo.

IBM believes that there is no single document storage system that best accommodates all of the different document types which are needed to support a typical business process. Any system that attempts to do so, compromises on either function or performance. Therefore an approach is needed to bridge the products and make them transparent to the user who simply wants to get access to the business information. Business document based information includes:

300816

- Images: typically large data objects which can be hundreds of thousands of bytes in size
- Computer Output to Laser Disk (COLD) documents: coded data documents with one to thousands of pages. These require sophisticated segmentation and indexing in order to be easily reviewed by users.
- Documents which require sophisticated controls for check-in, check-out, version control and document profiling: typically housed by a Document Management system

IBM EDMSuite includes the IBM ImagePlus portfolio for advanced document imaging and workflow (including VisualInfo), MQSeries Workflow for process and workflow management, the IBM OnDemand portfolio for archiving and presenting computer output such as statements and reports and Lotus Domino.Doc for collaborative document management. IBM ContentConnect is a middleware product which links the document storage and retrieval products into a cohesive system. ContentConnect provides these capabilities:

- Users can perform a single query to retrieve information simultaneously from all relevant document backend systems. The results are displayed to the user who can then select the documents they wish to display. The users deal with information and need not be concerned with where that information is actually stored.
- Administrators can map queries across servers even if the data models are different, without writing code. Utilities are provided to query for document types and their attributes in each of the backend systems. The administrator can join together different types of documents from each of the backend systems simply by clicking on relevant documents and attributes. A query interface is then automatically created for the user.
- The Java beans application development toolkit enables creation or customization of the user interface and Connectors to connect to non-EDMSuite databases.

IBM ContentConnect can be used with ImagePlus VisualInfo to provide intranet and Internet access. It provides simultaneous access to images and other documents in VisualInfo, COLD documents in IBM OnDemand and internally authored documents stored in Domino.Doc. Your company can decide if, and when, to add other document repositories. When the user initiates a search, the ContentConnect client will send the appropriate search criteria to each relevant document repository. The search results are returned from each repository to the client.

The ContentConnect client is an end-user Java application for searching the EDMSuite data repositories and displaying the search results. The "out of the box" user interface is actually built automatically "on the fly" when the administrator defines the search templates. No programming is required. There is a set of Java beans that can be used to create custom applications. The Java code includes viewers for both VisualInfo documents and COLD documents from OnDemand. Documents from Domino.Doc are launched and displayed in their native applications, such as Microsoft Word. You can also invoke your own viewer if desired; for example, Adobe Acrobat or the Microsoft Window's Imaging Viewer. The ContentConnect client can run as a standalone client, as an applet in a standard Web browser or in a Lotus Notes client.

Scalability

As your business grows or as you move new areas of your business to the ImagePlus VisualInfo environment, you can move to a larger library server, and to larger or more object servers. The importance of scalability should not be underestimated. Many companies have had to discard their initial imaging software because it could not accommodate growing business needs. It's painful and expensive to move to another system. Selecting an architecture that is highly scalable, such as VisualInfo, ensures that you will never have to address this issue. VisualInfo library and object servers operate on Windows NT, OS/2, AIX and OS/390 providing the greatest degree of scalability of any system. You can

300817

and OS/390 providing the greatest degree of scalability of any system. You can begin with one and migrate to another, without impacting the user or any custom applications you have written.

VisualInfo on the OS/390 (MVS/ESA) is an industry exclusive providing unparalleled scalability. For a technical description of our capabilities please see the EDMSuite Newsletter and read the article titled *New Library Server features in VI for MVS/ESA*.

Scanning and high-volume image capture

All ImagePlus VisualInfo clients include the capability to scan documents with desktop scanners or to import files directly into VisualInfo. The client includes Pixel ISIS drivers, which support a variety of scanners. Once scanned, documents can be routed to an appropriate workbasket (queue) for indexing.

For higher volume scanning, a batch capture subsystem is usually implemented. Kofax Ascent Capture and InputAccel from Input Software are production-level document capture applications that integrate high-performance batch scanning, image processing, Optical Character Recognition (OCR), Intelligent Character Recognition (ICR) and document indexing into a single package that significantly lowers the cost of capturing large quantities of documents into VisualInfo. These capture subsystems have "release" processes which integrate with VisualInfo. They provide for scanning in a disconnected mode so that you can determine the best time to upload batches of scanned documents to your VisualInfo system.

Implementation Skills

IBM Global Services and IBM Business Partners have a skilled staff of experienced project managers, architects and programmers to provide implementation and integration assistance. You can choose from an array of services from SmoothStart installations to full turnkey implementations.

It is highly recommended that you engage an IBM Business Partner or IBM Global Services employee if this is your first time implementing an IBM imaging system. Their skills and expertise will be invaluable in helping you implement a successful solution in a timely manner.

Software Support

IBM has a strong software support organization to keep customers satisfied. You may choose from a set of offerings including Prime Shift Support Line (8am to 5pm), Premium Support Line (24 hours a day, 7 days per week) or Per Incident Support Line. All of these options are backed by IBM's world-class depth of support and an escalation process to ensure your satisfaction.

Training

Training for our image system solutions is provided by the IBM Image Competency Center (ICC). In addition to providing this training this group of highly-trained specialists provides technical support on a regular basis to IBM Image Specialists, IBM Global Services personnel and IBM Business Partners. They are truly "battle tested" and provide hands-on training that is very relevant to what our customers can expect in their implementations and during ongoing support. You may choose from the available public classes, or custom on-site classes can be arranged. You may call 1-800-IBM-Teach to enroll or visit the Web site at <http://www.training.ibm.com/ibmedu/edushome.htm>. In addition, IBM Business Partners can provide quality on-site education which is tailored to your specific business application.

**Summary:
VisualInfo
capabilities
and**

300818

**and
the
business
issues
they
solve**

ImagePlus
VisualInfo,
a
distributed
and
scalable
client/server
solution,
enables
the
management
and
storage
of
a
broad
array
of
document
types
such
as
document
images,
graphics,
spreadsheets,
text,
audio,
and
video.

Capabilities

- Converts paper documents to images.
- Provides a robust library to store documents for use throughout the process.
- Provides electronic work routing.
- Allows users to mark

**Business
Issues
solved**

- Improves work processes, and customer service productivity through electronic access to files.
- Reduces process cycle times by providing electronic routing of work, and permitting simultaneous access

300819

- mark
up
document
images
just
like
they
do
with
paper.
- Handles
multiple
file
types
in
addition
to
images,
such
as
word
processing
documents,
voice,
and
video.
- Easily
tied
to
Fax
for
automatic
receipt
and
for
sending.
- Online
magnetic,
optical,
and
tape
storage
managed
by
Systems
Managed
Storage
for
automatic
migration.
- Intranet
and
Internet
accessible,
to
enable
e-
business
applications
which
can
access
data
and
document
content.
- Optional
CD-
 - access
to
files
by
multiple
personnel.
 - Improves
customer
service
quality
and
productivity
by
providing
immediate
access
to
records
while
on
the
telephone
with
a
customer.
 - Improves
disaster
recovery
capabilities
by
providing
for
off-
site
storage
of
backup
copies
of
documents.
 - Allows
you
to
create
complete
electronic
files
for
customers,
including
documents
and
photographs
they
sent
you
(images),
documents
you
created
to
send
them
(letters)
and
business
application
generated

300820

CD-
ROM
distribution.

- Integrates
to
Lotus
Notes
and
SAP.

generated
output
(spreadsheets,
etc.).


Back
to top

[Privacy](#) | [Legal](#) | [Contact](#) |

300821



Ascent
Capture
Release Scripts



Ascent Capture 3 Production-Level Document and Data Capture

The Solution for All Your Capture Needs

Ascent Capture 3 is the first production capture solution that delivers a revolutionary combination of three key capabilities – **Document capture**, **Data capture**, and **Internet-based distributed capture** in a single, low cost application. You'll have all the powerful document capture features you've relied on in previous versions of Ascent Capture, plus data capture and Internet capture capabilities previously unavailable in a single application — until now. Ascent Capture has proven itself as the most reliable and widely-used production-level document capture application in the world.



Capture Both Documents and Data

Ascent Capture not only delivers unsurpassed scalability and batch control for the most demanding document capture environments, its robust forms processing capabilities eliminate costly sorting into form and non-form batches. The forms processing module automatically identifies and registers different documents accurately and quickly. Once the form is identified, the forms processing module can recognize machine-printed characters (OCR), handprinted characters (ICR), mark sense zones (OMR), as well as barcodes and patch codes. In addition, image cleanup can be performed on a zonal basis to improve data recognition.

Distributed Capture Anywhere in the World

Ascent Capture's Internet-based distributed capture capability eliminates the common and costly practice of shipping documents from remote offices to a central site for processing. The optional Ascent Capture Internet server enables remote scanning and indexing of documents via connections ranging from dedicated lines to inexpensive dial-up service. Now, IT and IS managers can develop and implement an enterprise-wide capture solution that allows documents to be scanned inexpensively at remote sites and then automatically uploaded to the central site, securely and reliably.

Scalable to Meet Your Needs

Organizations can start off with a single low cost, low capacity configuration and increase capacity by adding additional scanning, validation, QC, verification, recognition, or release stations. A low volume configuration can be quickly expanded to process more than 100,000 forms or documents per day.

300822

Best-of-Class Usability and Easy Installation

Ascent Capture's new user interface maintains its acknowledged reputation for operator ease of use and fast, simple installation. Ascent Capture can be up and running in hours, rather than days or weeks of expensive installation and customization – and when the job changes, Ascent Capture's dynamic batch editing makes document and batch class setup easier than ever.

Batch Orientation

The key to Ascent Capture is its powerful batch orientation for processing documents. System administrators use a simple menu driven interface to define processing procedures and rules for each document type to ensure that every document is scanned and validated the same way. Ascent Capture's administration module controls the setup and definition of all batch classes, document classes, form types, field types, validation scripts, and release scripts within a highly configurable user interface. Since each batch class definition contains all elements of the batch, administrators or service providers can pre-configure each batch and then distribute them to other sites or archive them for backup purposes.

Integrated Quality Control

Scanners are not perfect. The Quality Control/Rescan module allows quick, easy, and accurate identification of poor images. Poor images or improperly identified form types can be replaced quickly to maintain batch efficiency and integrity.

Scripting

Ascent Capture provides extensive scripting capabilities to allow administrators to customize its operation. The scripts can run in the Ascent Capture recognition and validation modules for field validation, database look-up, field formatting, enhanced recognition, and tight integration with outside processes.

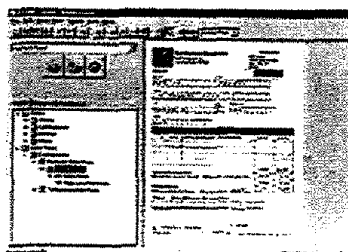
Web Publishing

As organizations leverage the Internet and Intranets/Extranets to improve their competitiveness, Ascent Capture can be an integral part of the process of transforming paper based information into electronic data. Ascent Capture's built in PDF support allows users to quickly and easily publish paper based content to the web. Ascent Capture supports output of normal PDF, image only PDF, and image plus hidden text PDF.

Integration with Workflow and Document Management Applications

Ascent Capture ships with release scripts for any ODBC compatible database or for the output of a delimited ASCII file. In addition, release scripts are also available for Documentum, Eastman Software, Excalibur, IBM ImagePlus, IMR, Keyfile, Magellan, NovaSoft, OpenText, Optika, PC Docs, Watermark, and many more.

300823



Here's What's New with Ascent Capture 3:

- [What's New in Ascent Capture 3](#)
- [15 Reasons to Change to Ascent Capture 3](#)
- [How do I Upgrade to Ascent Capture 3?](#)

Additional Ascent Capture Product Information:

- [Free demo software on Ascent Capture is available for downloading.](#)
- [Ascent Capture Success Stories](#)
- [Versions of Ascent Capture are available for IBM Enterprise Document Management Suite.](#)

Ascent Capture White Papers:

White papers are available detailing a variety of capture-related topics including:

- [The Dynamics of Cost in Document and Data Capture](#)
- [Merging Document Capture with Data Capture](#)

Ascent Capture Technical Manuals:

- [Ascent Capture 3 Getting Started](#)
 - [Ascent Capture 3 Release Notes](#)
- These Release Notes are also available as a [PDF file](#)



You can obtain a list of the scanners supported by Ascent Capture 3 by accessing our online [Kofax Scanner Configurator](#).

We'd like to hear from you. Please send your questions or comments directly to our [Ascent Capture](#) or [Ascent Storage](#) Product Manager.

300824

IBM.
Home | News | Products | Services | Solutions | About IBM

Shop IBM | Support | Download

Search

Software
Database and Data
Management

EDMSuite

Overview
More information
News
Case studies
Library
Events
Education
Business partners

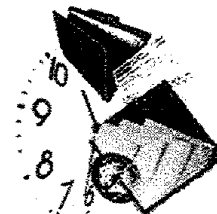
Additional resources:

IBM EDMSuite
ImagePlus
IBM EDMSuite
OnDemand
IBM EDMSuite
ContentConnect
IBM MQSeries
Workflow
Lotus
Domino.Doc

Enterprise Document Management Suite

IBM® EDMSuite provides integrated and networked document management to help customers easily access, integrate and manage e-documents spread across and beyond the enterprise. The Suite includes products for imaging, workflow, COLD and enterprise report management, collaborative document management, and Internet connections.

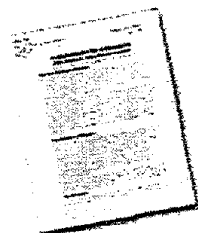
POWERED
BY
DB2



Features at a glance



IBM's Interactive Enterprise annual international technical conference meets June 8-10 in New Orleans, LA.



e-documents for e-business:

IBM's EDMSuite Takes Aim at e-business is a new white paper by Bruce Silver Associates. A brief registration is required.

Spotlight



IBM EDMSuite wins a "Best of AIM" award in e-business

Related links

→ [Techinfo Center](#)
→ [Content Management](#)
→ [EDMSuite Newsletter](#)
→ [EDMSuite Feedback](#)

If you want more details about an EDMSuite product, select the appropriate product below.

- **IBM EDMSuite ImagePlus®** for production document imaging and workflow
- **IBM EDMSuite OnDemand** for COLD and enterprise report management
- **IBM EDMSuite ContentConnect** for consolidated and/or Web-enabled access to multiple document repositories
- **IBM MQSeries® Workflow** (formerly FlowMark) for advanced workflow and enterprise process management
- **Lotus® Domino.Doc** for collaborative, distributed document management including life-cycle management



IBM EDMSuite was chosen as a Product of the Year for 1998 in the January 1999 issue of *Imaging & document solutions*.

300825

OF THE YEAR
98**News**

- "Brewing Success," a new IBM EDMSuite OnDemand case study in AS/400 magazine
- MidContinent Business Systems helps Curries Company implement an IBM EDMSuite solution
- IBM EDMSuite OnDemand partner BlueGill announces i-Series electronic bill presentment and payment technology
- IBM IGS EDM National Practice partners with IBM EDMSuite
- "Marrying the Workflow to the Web" in Beyond Computing (3/99)

[Privacy](#) | [Legal](#) | [Contact](#)Electronic
Download

300826